Health And Physical Education For Schools

HEALTH AND PHYSICAL EDUCATION FOR SCHOOLS

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TO MY WIFE

PREFACE

THE purpose of this book is to show the need for health and physical education in the schools of India and to provide practical material for the use of teachers. The subject matter was developed during a period of four and a half years as Superintendent of Physical Education of the Central Provinces and Berar, and is the result of practical experience and numerous discussions with Indian educators. An effort has been made to give a clear conception of a school health programme.

It can no longer be taken for granted that health instruction as such will bring about desired health habits and attitudes, or that monotonous drill will meet the needs of the growing boy. Health instruction is valuable, but a curriculum should be devised which will result in the actual practice of those fundamental health rules which are the basis of healthful living. Drills may be used, but these do not in themselves give that physical and functional development which a well-rounded programme can provide. A sound physical education curriculum should be organized to meet the needs of the individual It is hoped that this book may contribute to the creation of a plan based on these needs.

I am indebted to many friends in India for stimulating my interest in writing this book. To E. A. Macnee, M.A., Director of Public Instruction of the Central Provinces and Berar, I am indebted for reading the text and offering suggestions ; also to J. H. McCurdy, M.A., M.D., M.P.E., for his advice and guidance in organizing the material.

A. J. DANIELSON.

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Chapter I

INTRODUCTION

There are two general fields of health. The first is concerned with the curing of disease and the correction of abnormal conditions, so that the individual may be as free as possible from any functional or structural defects which he may have acquired by heredity, by accident or through unfortunate circumstances or from preventable causes. This is the field with which the majority of the great army of doctors, nurses and specialists are chiefly concerned. The second field is related to the prevention of disease and abnormalities and to the building of a strong, healthy race by eliminating the causes of poor health. This work is being done by the public health departments of cities, by organizations such as the St. John's Ambulance Association, the Indian Red Cross Society, the Young Men's and Young Women's Christian Associations and other similar bodies, and to some extent in our schools through courses in physical and health education.

This book deals with the subject of health and physical education in schools, with special reference to the conditions of life in India. Since the fact is that few homes provide adequate health instruction or give sufficient attention to the development of health habits, it is generally admitted by educators that educational institutions should assume the responsibility for such instruction. However, so much attention is given to pouring knowledge into the child in preparation for examinations that health and physical education are crowded off the curriculum and the child's basic needs neglected.

In the past, and, to a great extent, as the present time, physical and health education has not been and is not given its proper place in the general scheme of education. This state of affairs is now fortunately changing. There are, however, difficulties to overcome. The school time table is already overloaded and educators stand aghast at the thought of adding an extra subject to the crowded curriculum.

A schedule which fails to provide time for health education and an adequate programme of physical activities is not fair to the child. Winslow and Williamson state that "for many years educators were accustomed to interpret the principle of self-development for the student in purely mental terms. The school was considered to have fulfilled its mission, if the school child were trained to use his mind and to develop it as a useful instrument. To-day, however, all are agreed that education should not only deal with the mental development of the individual, but should also prepare him for a life of physical fitness, thereby increasing his usefulness to himself and to society."[1] Many educators now think that the entire curriculum should be reorganized so that health may be given its proper place in the school. R. M. Binder makes a statement which concerns every educator.[2]

> "Progress is possible only with a surplus of vitality over the immediately necessary activities of life . . . . Civilization progresses in direct ratio to the interdependence of persons and peoples; *i.e.*, on the interchange of mental and industrial products which result from a healthy individual and social life."

An adequate programme of health and physical education for our schools is divided into four parts: physical activities; health teaching and the development of health habits; physical and medical examinations with a workable follow-up system; and consideration of the school environment from a health standpoint. A scientific programme of physical activities is needed in schools for many reasons. First, the individual requires a sufficient amount of big muscle activity to keep him physically fit. In the millions of years during which man was developing in the slow process of evolution the vital organs attained their present size and shape in order to meet the needs of the big muscles which did the hard work necessary in the struggle for existence. Life in these days is radically different from that in the days of the not far distant past when people got enough big muscle activity

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[1] Winslow and Williamson, *The Laws of Health and How to Teach Them*, p. 14.

[2] R. M. Binder, *Health and Social Progress*, pp. 76-77.

in their work to keep them in good physical condition. Tyler[1] says, "One hundred years ago the school could rightly lay all its emphasis on books and learning. These the home could not supply. But home and farm could and did insure physical health and vigor, all kinds of manual training, ingenuity, perseverance and efficiency. Now the school must furnish all these, as well as mental discipline and culture. Especially it must insure nervous strength, vigor, poise and endurance. In one word, it must be an institution of power as well as of learning." Biologists tell us that the vital organs of the body depend upon big muscle activity for normal functioning.

School life introduces radical changes into the lives of children. They are taken from a free, active life to one requiring much sitting and decreased muscular activity. Usually they remain in school for from five to six hours daily. In the morning before going to school they have little time for activity because of the morning meal and the necessary preparations for attending school. After school they are tired because they have not in most cases had food since the morning meal and this along with the fact that they must do a certain amount of home work, gives them little time for big muscle activity. With all these things considered there can be little doubt that the school should provide a suitable programme of physical activities daily. Two or three periods a week is decidedly inadequate. The minimum should be one period per day.

The second reason why a programme of physical activities is needed is the relation of activity to the mind. If big muscle activity has played such an important part in the development of physical man, it has also had an important relationship to his mental life. I do not mean the acquiring of knowledge, but the very foundation of the brain into which knowledge is absorbed. The central nervous system is divided into three parts: first, the sensory organs and nerves whereby we receive impressions from about us; second, the central brain which assimilates to itself these impressions and organize them; third, the motor

[1] John Mason Tyler, *Growth and Education*, p. 15.

nerves and muscles by which we react to the outer world, associated with which are the autonomic nervous system and the glands. These three systems are the sum total of the mental equipment.

What, then, is the relation of physical activities to the mind? With regard to the sensory organs and nerves, the most sensitive types of life on the earth are those with the most perfect sensory organs and nerves. Plants are less sensitive than animals, and lower animals less sensitive than higher animals. The reason for this is the greater range of movement, which shows that motion has a definite bearing on sensitiveness. This is also shown in the various parts of man and animals, for those organs which perform the greatest amount of movement are the most sensitive. The tongue and index finger are the most sensitive parts of the body because they are the most mobile. The middle of the back is the least sensitive because it is least active. Similarly the elephant's trunk and the parrot's beak are highly sensitive.[1]

Because all impressions come in through the senses, it is found that after all due allowance is made for differences in quality of mind, those individuals who are most active are most sensitive. "All work and no play makes Jack a dull boy" is for this reason a true saying. Experiments with active and sedentary boys and men, dealing with the tactile, kinaesthetic and visual senses, have proved these contentions.[2]

Physical activities also have a definite effect on the second division of the central nervous system, the brain. When considering this point the relation of *movement* to the fundamental aspects of the mind, that is, our conceptions of time, space and cause and effect, must be kept in mind. James Johnstone states that "what we call space depends on our intuition of bodily exercise. This intuition includes that knowledge that a certain change has occurred as the consequence of the expenditure of a certain amount of bodily energy and that, as the result of this change, the relation of

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[1] George E. Dawson, *Educational Content of Physical Education* in *American Physical Education Review*, October 1923, p. 357.

[2] *Ibid.*, p. 358.

the rest of the universe to our body has become different."[1] Movement is the beginning and the end of consciousness. Even inanimate things are composed of electrons and protons which are in ceaseless activity. It is through activity that the normal foundation of the brain is laid. Generally speaking, a child which seldom plays, or which is prevented because of some defect from participating in normal actitivies, does not develop normally. The school child spends many hours each day in sedentary occupation and is thereby restricted in his participation in the activities which are fundamental to his development. Physical activities for school children are educational in the deepest sense. In the class room the finer muscles of the hands are chiefly used. These were the latest to develop in the process of evolution and are not related to such a great extent to the basic emotions and reactions as are the big muscles of the trunk and legs. Because of the close relation of the finer muscles to intelligence, their use tires the brain in a comparatively short time, and quantities of big muscle activity are necessary to counteract this fatigue. This explains why a child will run about and play for long stretches of time without undue fatigue, but becomes quite tired from an hour of piano practice or writing. Such tiring is due to the fact that a larger number of nerves is required for the small muscles of the body than is needed for the larger muscles.

The third part of the central nervous system, namely the motor nerves and muscles, is obviously meant for action. We receive sensations from our environment ; we organize and coordinate these in the central brain ; then we act. Proper action with all it implies is really the aim of all education. Dr. Dawson[2] says, "We live, not to be, but to do ; not to feel and think, but to realize the ends of feeling and thinking in creative activity." He quotes the poet Goethe, " In the beginning the deed," and adds " and from far off time creation among things and men has been an eternal epic of deeds."[3] No person is really living who contemplates life from the side-lines. It is in the thick of the struggle that many of the richer experiences of life are had.

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[1] James Johnstone, *Philosophy of Biology*, p. 23.
[2] George E. Dawson, *loc. cit.*, p. 359. [3] *ibid.*

In addition to the relation of activity to the basic mind, physical activities also have a relationship to the formation of desirable habits and attitudes. It is wrong to assume that physical activities are valuable merely as activity. The "concomitant learnings", sometimes called simultaneous learnings, whose existence is so often ignored by teachers, seem to be far more important in motor activities than in any of the theoretical subjects. Kilpatrick[1] states that there are three types of learning, the primary, the associate and the concomitant. The primary is concerned with the thing under consideration: for instance, in playing a game, the actual learning of the skills involved to play efficiently is the primary learning. The associate learnings or "associate suggestions" are those allied thoughts or ideas which come from playing the game. These, if followed up, would lead one away from the game ; for instance, one may ask himself how the ball is made. The concomitant learnings are those which arise from the whole procedure of playing the game, but may be applied to other aspects of life. One may say it is necessary to keep fit or to be honest and fair in all dealings. Kilpatrick states that "in general one may say the concomitant learnings have to do with more generalized ideals and attitudes while the primary learning has rather to do with specific knowledge and skills."[2]

In games and other activities, the individual is required to react to situations which demand right decisions. In education the student is primarily learning the subject at hand, but secondarily he is learning to be interested in it or to dislike it. He is learning mental discipline or he is developing a slovenly mind in relation to the subject or group of subjects studied. Similarly, while the student is learning, say hockey primarily, he is learning secondarily fair play, co-operation, honesty, initiative, courage and other desirable traits, or else poor sportsmanship, dishonesty, selfishness etc., according to the quality of supervision. Properly supervised physical activities are excellent for developing good mental and moral qualities, because they provide countless situations calling for immediate decisions and are so arranged that an

[1] William Heard Kilpatric, *Foundations of Method*, pp. 102-3.
[2] William Heard Kilpatric, *Ibid.*, p. 103.

individual making a wrong decision must make immediate reparation. They are excellent character-building media for giving people experience in actual human relations. An individual may have proper conceptions of mental and moral traits and yet not possess those traits. No one develops courage without doing things which require courage, nor becomes a good sport without practising good sportsmanship.

It cannot indeed be assumed that learning in one situation such as a game will necessarily be transferred to all other life-situations. But there is a probability that learning in one field of human activity does in a general way affect one's attitudes in other situations. Games are only one part of life, but those things learned from games contribute, along with other factors, to the development of the personality.

The teacher of physical activities is truly an educator when he understands the underlying facts regarding these activities. When the child is trained in the fundamental body movements, and when through such activities he at the same time develops habits and attitudes of co-operation, fair play, honesty, etc., he is truly being educated, because these habits and attitudes make a valuable contribution to his personality. The influence of physical activity on the individual himself, the inner being, is indeed great. Man cannot develop properly by theoretical knowledge alone, but must depend upon broad experience which involves the actual physical participation in life.

This is a field of education which should have a place on any curriculum. Clark Hetherington[1] states, "The values of physical education in character training bulk large because natural big muscle activities are the out-croppings of the most fundamental instincts and emotions in human nature." "Play," says Joseph Lee, "is growth under the supervision of the great achieving instincts, the chief of which are hunting, fighting, creating, rhythm, nature, curiosity and team-play."[2]

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[1] Clark W. Hetherington, *School Program in Physical Education*, p. 27.

[2] The Playground and Recreation Association of America, Joseph Lee, President, *The Normal Course in Play*, p. 94.

Another reason why physical activities are needed is that they are the best methods whereby one can develop physical skills. The body should be trained in the fundamental movements, such as running, jumping, throwing, vaulting, climbing, mounting, dismounting, hurdling, swimming and all other movements related to physical skill. Primitive man required proficiency in most of them for his survival. Our physical and, indeed, basic mental inheritance is closely related to these movements. The past is ever present, for we have a long list of ancestors whose life activities have made us fundamentally what we are. Every man living today is a descendant of those who could adapt themselves to their environment ; and there is still a place in our lives for motor skill.

Self-confidence, courage, self-control, initiative, etc., seem to be based to a large extent upon our inner knowledge of our physical ability. A physically efficient person knows what he is capable of doing in physical situations, while one who is not efficient is not sure. The natural result is a feeling of self-confidence, while a feeling of insecurity clings to the one who lacks motor skills.

Another reason why physical activities are necessary is that good posture can be taught through such a programme and some physical defects corrected through remedial gymnastics. School life is not conducive to correct carriage of the body, and special attention should be given to good posture and the correction of remediable defects.

Physical activities for primary schools, especially the first and second classes, should consist chiefly of informal and imitative activities. Story plays, in which familiar activities in the home, in work, in animal life, etc., are dramatized, elementary games and imitative marching appear greatly to children and are more suitable and beneficial to the child than formal[1] drill and other activities. The child lives in a world

[1] The word " formal " requires explanation. In general it denotes those activities which require more mental effort and less individual freedom than do the informal activities. The class is usually under a strict discipline. There is not the free expression of the emotions as there is in games. In other words, teaching formal activities is usually much like teaching English or mathematics so far as

of imagination and imitation, and physical activities should therefore appeal to the love for dramatics which is so strong in children of primary school age.

In the third and fourth primary classes a few formal activities may be introduced, such as marching and calisthenics, but under no circumstances should these prevent the students from participating daily in informal activities.

There should be at least one forty-minute period daily for physical activities in primary schools, and also a five-minute relief period at mid-morning and mid-afternoon to provide relief from the cramping effect of sedentary school work. Children are naturally active and it is quite often a genuine hardship for them to sit quietly for long stretches of time.

In middle and high schools there should be one period daily in the time table for physical activities, and more if possible. Three times a week this period should be used for physical instruction, including such activities as marching, calisthenics (that is dumb-bells, Indian clubs, wands, lazium, bothati), self-testing activities, athletics and elementary games. Half of each of these periods should be used for marching and calisthenics and the remainder for self-testing activities, athletics and elementary games. No period should be used entirely for formal activities, for one of the values of physical activities is relaxation from the concentration of the class room. The remaining periods during the week should be used for major games and athletics. Such a programme should be progressive from middle to high school and should be suited to the mental and physiological ages of the students. Schools unfortunate enough to lack fields for major games should use these periods for activities which can be performed in a small space, such as minor games, athletics, and self-testing activities.

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discipline and emotional expression is concerned. Marching, calisthenics and apparatus exercises are usually classed as formal activities. The word is, however, a relative term. An activity may be very formal when taught by one teacher and quite informal when taught by another. It depends upon the amount of interest the teacher is able to create. A game may be termed formal as taught by some teachers. Many of the so-called formal activities may be made interesting and enjoyable by resourceful teachers.

The National Education Association of the United States, in their Report on Physical Education in Secondary Schools, recommends the following: [1]

Two periods per week, minimum of 90 minutes each, as follows:—

		Minutes.
1.	Hygiene instruction once a week	15
2.	Passing to locker room and undressing ...	15
3.	Exercises and games	45
4.	Shower, dressing and passing to class room ...	15
		90

Supplemented by:—

Play periods of one hour each after school.

Regular recess period and setting-up exercises between class periods.

Not only is an adequate programme of physical activities necessary in our schools, but there is also an urgent need for theory courses in health education. Much of the suffering and unhappiness of humanity is due to ignorance, and yet there is available a large amount of information which deals with the causes and prevention of disease and abnormalities. Such men as Dr. Jenner, Sir Ronald Ross, Dr. Pasteur, Lord Lister and a host of other scientists and public servants have discovered facts about hygiene and disease control which are known and put into practice by the comparatively few trained people, but which are hardly guessed at by the great mass of humanity. The school is the logical place in which to impart health knowledge and inculcate health habits ; for the child acquires them while he is plastic and receptive and carries them over into adult life. A progressive scheme of health education in the school will do much in reducing ignorance, superstition, poor health and early death. Such training is especially necessary for this country, for statistics for India show that the death rate is very high as compared

[1] *United States Bulletin*, No. 50, 1917. *National Education Report on Physical Education in Secondary Schools*, p. 15.

with Western countries. According to Dr. B. N. Ghosh,[1] in 1927 the death rate per thousand in England and Wales was 12.3 ; in the United States it was 11.4, while in India it was 24.89 or twice as high as in those other countries. The average duration of life in India as compared with Western countries is also low, the following being comparative figures given by Irving Fisher:[1]

	Males.	Females.
Sweden	50.0	53.6
Denmark	50.2	53.2
France	45.7	49.1
England and Wales ...	44.1	47.7
Italy	42.8	43.1
India	23.0	24.0

The high death rate and low expectation of life in India are due chiefly to preventable causes, such as poverty, unhygienic customs, and lack of education—the last being perhaps the chief cause.

The individual requires knowledge regarding three fields of health: mental health, physical health and group health. These can be taught in a health education course which includes personal and group hygiene, elementary physiology, sex hygiene and first aid. The laws of the mind with regard to health should be known to every individual, for this knowledge means much to one's happiness and efficiency. A healthy philosophy of life is one of man's greatest assets. With that he can face the various situations and problems of life effectively.

There are four criteria of a healthy mind. The first is a healthy "feeling tone". By this is meant one's general feeling —that is, is one continually sour or sweet, happy or unhappy, negative or positive? Does one feel well or unhealthy? If these feelings are negative one should ascertain and remedy the causes for such feelings. Many people lead unhappy lives because they do not know the importance of normal "feeling tone". The causes of an unhealthy feeling tone may be physical or mental. There may be something wrong

[1] Birendra Nath Ghosh, *A Treatise on Hygiene and Public Health*, p. 673.

[1] Irving Fisher, *Report on National Vitality*, p. 16.

physically, such as a bad tooth, chronic constipation or some hidden defect. Mental causes are excessive worry, selfishness, abnormal expectations, etc.

The second criterion is a well-regulated will. Is it overdeveloped or weak? Does one have difficulty in acting or in getting things done, or is the will so strong that it continually brings one in conflict with those with whom he comes in contact? Here is an important problem which should be considered in education.

The third criterion is well-regulated instincts. There is much discussion in these days regarding the actual number of instincts which man has. Behaviorists and other students of animal psychology are of the opinion that "habit formation starts in all probability in embryonic life, and that even in the human young, environment shapes behaviour so quickly that all of the older ideas about what types of behaviour are inherited and what are learned break down."[1] However this may be, instincts or habits such as fear, anger, curiosity, sympathy, shyness, love, shame, imitation, emulation, rivalry, play, constructiveness, destructiveness, etc., must be normally developed. Take, for example, the instinct of fear and its relation to mental health. Excessive fear is a great handicap to an individual whether it be one or several types from which he suffers. Instincts and habits play such an important part in life that it is unwise to neglect instruction concerning them in the educational system.

The last criterion is an efficient intelligence. An efficient intelligence is one which desires facts and truth ; it is a mind which is plastic and ready to apply new truths to itself ; it must have sufficient evidence for its beliefs. Such a quality of mind should be instilled in school children as they grow to maturity, for every one is exposed to a large number of perverted ideas and superstitions which are generally accepted as true and which affect the conduct of the individual and his whole mental outlook.

Knowledge about physical health is also needed by the individual. Mental and physical health are closely related, the body affecting the mind and the mind the body. The laws which must be observed if the body is to be healthy

[1] John B. Watson, *Behaviorism*, p. 79.

should be taught in the schools. Health is based first on knowledge and, second, on the application of that knowledge. There can be no application of health laws if the individual has received no instruction in those laws.

The material concerning physical health should consist of those things which are the fundamental needs of the people. First, knowledge of the structure and functions of the body and its parts is necessary, as a clear understanding of the body will eliminate many superstitions and queer ideas which are prevalent and will be a basis for intelligent application of health laws.

Facts about the care of the body are also needed. These involve the subjects of food, water, sleep, cleanliness, air, sunshine, exercise, regular habits, protection from infection, posture, communicable disease control, sex and first aid. When teaching these particular topics it is well to emphasize the practical rather than the theoretical. It is of great importance that the knowledge be put into practice, especially in the school, where some control is possible of the daily habits of the students. Health should be emphasized in every course when the subject matter permits and every teacher should co-operate in the developing of health habits. It is impossible for this work to be done by one teacher in a school. Every possible means should be employed in order that the students may attain desirable standards in health.

In addition to mental and physical health-knowledge, the individual should understand facts regarding group health. Man is a gregarious animal and everything he does has its effect upon his fellows. Community and individual health are closely related, but there are various factors, from a group standpoint, which deserve special attention in the schools. Home hygiene is one of them. The home has a powerful influence as an example and every home should therefore be sanitary and healthful. The school is the place in which to instil this knowledge, for practically every student will some day have a home of his own. There are public health problems regarding water, bazaars, cleanliness of environment, infectious diseases, food supply and disposal of refuse. Large sums are spent for public health departments in cities. Their work would be greatly facilitated if school

children were given a grounding in this field of education. Such instruction will well repay the tax-payer and will give a basis for intelligent action on the part of citizens.

Another important part of a health education programme, in addition to physical activities and health instruction, is a system of medical examinations, including a proper follow-up system. Boys come to school from all walks of life. Many come with physical or functional defects which are a distinct impediment to their progress in school and to their own physical efficiency. The schools have a large number of students with chronic ailments, malnourishment, spinal curvature, flat feet, poor eyes, defective hearing and other defects. In many cases nothing is done about these things in the home, in fact, frequently the presence of an ailment is not realized. A student may be habitually dull, unhappy, passive or irritable without knowing that the cause is probably physical. If children are to derive the maximum benefits from schooling they must first be examined to discover if they are sound in body. Such an examination should be given early in the school year so that any ailments may be detected in time for action to be taken.

By far the most important part of an examination system is the work of remedying defects found by the medical doctor or by the physical instructor. This is where many examination systems fall far short of the ideal. An examination is useless unless something is done about it. Every school should have a well-organized follow-up system and there should be a spirit of co-operation between the school authorities and the medical and public health authorities, so that hospitals and clinics may be open to school children. The attitude of fear shown by many toward hospitals, clinics and doctors should be dispelled, and school children educated to an attitude of trust and confidence toward those organizations and men. Quacks and other money-making impostors are too often allowed to treat ill health, when public servants who have spent years in scientific training are just as easily consulted at no greater cost. This problem is linked to the question already mentioned of the need for an efficient intelligence.

The last aspect of health education which deserves attention and which is related to the health of the school child is

the school environment, which should be ideal as far as possible. The school rooms and grounds should be ideally clean. There should be a sanitary water supply as well as suitable desks and seats. The rooms should be well-lighted, but free from glares. Boys in hostels should be segregated according to their physiological ages and the food in hostels should be prepared according to modern scientific dietetics. Precautionary measures should be taken to protect the children from communicable diseases. In this connection, no teacher suffering from tuberculosis should be allowed to teach. First aid material should be on hand. Malarial infection should be guarded against by treating any infected streams, swamps, tanks or wells in the vicinity of the school. Adequate bathing facilities should be available. Children should not be expected to remain in school for long hours without nourishment and rest at mid-day.

The importance of a wholesome school environment cannot be ignored when it is realized that children remain in school for five to six hours daily during eight to ten months of the year. The school and its surroundings should be an example to the students of sanitary buildings and grounds and of the way in which those factors in the environment which are potentially detrimental to health can be controlled. A good example is just as necessary in instilling facts as instruction in theory. In many cases facts and standards acquired by the child in wholesome and sanitary school surroundings are carried by him to his home, where they have an effect upon conditions.

Adequate systems of health education have been introduced in the schools of many countries. India is behind many other countries in this regard, but there is a large group who believe that such instruction should have a place in education. At this time when schemes are being devised and systems introduced there are a few warnings which should be heeded if the mistakes of other countries are to be avoided.

First, with regard to physical activities, no system should be introduced which is based primarily on the development of strength and big muscles. There is a tendency in India to regard strength exercises as most suitable for physical development and the strong man is therefore idealized. This

tendency should be checked, for it is known that too much emphasis on weight lifting and heavy exercises develops big muscles at the expense of physical skill and efficiency. Not only that, but individualistic strength exercises, if practised to a great extent, have a decidedly dulling effect on the brain. Moreover, if excessively large muscles are developed they must be used for the remainder of one's life—that is, strength exercises must be continued—or else the body becomes fat and flabby. When a large number of muscle fibres are developed the supply of nourishment is increased. When the fibres cease being used the excessive supply of nourishment naturally is stored to some extent in the form of fat. The strength required by primitive man is not needed in modern, civilized society. We should emphasize the all-round development of the body rather than strength in physical activities programmes. Such things as skills, posture, secondary character learnings, normal strength and functional power are more necessary.

The second warning is that youth must not be judged by adult standards. Adults are prone to expect children to perform the same activities as are used by themselves. This is a great fallacy, for children are physically and mentally unlike adults. From birth to the adult stage the individual passes through many stages of development. These must be recognized by educators. The child lives in a world of imagination and imitation and the formal, stiff types of activities are utterly unsuited to him. He requires more of the natural activities and less of strenuous activities than does the adult. His organs, muscles, bones and nervous system are undeveloped. Growth and suitable activity are the most important things to consider in the development of children. Before the age of about twelve the child is preparing for the great pubertal change. He is not fully developed, but is adjusting physically for the critical adolescent period. He should not be expected to run long distance races or to perform other difficult activities which are meant for the adult. During adolescence the bones increase in length. The muscles and vital organs do not increase in proportion. The boy is lean and awkward ; his muscles are stretched over the bones. The heart and other organs soon begin to grow rapidly, but they should not be over-taxed. It is at this

time that poorly supervised activities result in heart dilation and leaky valves. Boys should not of course be pampered, but their activities should be so supervised that they will develop normally and so that no harm is done. It is essential, then, to provide activities which are suitable for the different stages of development.

A third warning is not to consider as valuable only those physical activities which are spectacular in nature. Little of the beneficial work in physical activities is showy. Spectacular activities are not necessarily the best for the individual ; in fact, when these are emphasized the child is not receiving the training which he requires. It is a well-rounded programme which he needs, and although there are some spectacular elements, most of the training is not of the impressive type. Headmasters and teachers who stress ostentatious activities are really exploiting the students in order to make an impression.

Fourthly, it is important that too much emphasis be not placed on inter-school competition. In this case only a few students participate in competitive games while the great majority are spectators. An intra-school competitive programme in which all the students participate should be organized first, and then if it is possible competition with other schools may be arranged. It is far better to give all the students the opportunity to benefit by intra-school competition than to concentrate on inter-school competition in which only the best players can participate.

The fifth warning is against considering the usual teacher capable of teaching a modern programme of physical activities. Physical activities is a specialized field of education and requires trained teachers. An untrained teacher often does more harm than good. In the past, illiterate and poorly trained drill masters have been responsible for teaching these activities. They understood little about the educational side of this field and had a very limited knowledge of activities. As a result drill was greatly disliked by boys and considered as unimportant by headmasters and teachers. The drill master was poorly paid and was not respected by other members of the staff or the students. There are still a number of these untrained drill masters in India who are really teaching the students to dislike activities instead of

to like them as they should. Trained teachers with equal standing with other teachers on the staff are urgently needed, for only then can a scientific programme of physical activities be introduced.

Lastly, it is well to give warning concerning health teaching. The danger is that the practical side of health subjects will not be stressed. There can be no doubt that health teaching and the development of health habits should go hand in hand ; in fact the latter is the more important, for the chief aim of health teaching is the formation of desirable health habits. It is necessary, then, to emphasize the practical side of health. Students should be encouraged so that habits of personal cleanliness, exercise, sleep, eating, posture and many others are acquired through their own initiative. The wise teacher will tactfully guide the student in forming his own judgment as to the value of individual health habits both to himself and to society so that he will have a personal conviction which will result in the practical application of his knowledge.

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Chapter II

A HEALTHFUL SCHOOL ENVIRONMENT

The importance of the school environment is apparent when it is realized that day scholars spend there from five to seven hours daily and hostel students practically all of their time. There are a number of general school health problems which require the special attention of school authorities in the process of improving those schools which have surroundings detrimental to the health of the students.

Seats and Desks.

These should be adapted to the student—not the student to the seat and desk. As a student is usually required to sit in the same seat and at the same desk throughout the year the problem of suitable school room furniture is one which needs special consideration. If a student is forced to sit in a seat and at a desk unsuited to his size and poorly constructed, he may acquire structural defects such as round shoulders, lateral curvature of the spine and cramped chest. The uncomfortable position makes him irritable and results in a loss of nervous energy, to the detriment of his studies.

It is therefore necessary that each school have the proper types of seats and desks, and that students be arranged in seats suitable to their heights at the beginning of the school year. "If a child is properly seated he should be able to rest his feet comfortably on the floor without pressing upon the nerves and blood-vessels under the knee ; the seat should be so shaped as to encourage the sitter to sit with the pelvis well back in the chair ; the distance of the chair from the desk, its height and slant, should be such that bending forward will not be encouraged."[1] Dressler states, "If the

[1] J. Mace Andress. *Health Education in Rural Schools*, p. 242.

backs of school benches or chairs be just a little lower than the shoulder blades of the pupil when sitting properly, the best results, other things being equal, may be obtained."[2]

The desk should be about the height of the lower end of the breastbone. The top of the desk should project over the front of the seat, but not so much as to prevent comfortable sitting and rising.

Single seats are much more suitable for schools than the double type. Each room should have seats and desks in three sizes so that there may be suitable sizes for all types of students. The adjustable seat and desk are most suitable, but are more expensive than the non-adjustable kind. When adjustable seats are not available foot rests of varied heights may be provided for those students who are not able to place their feet flat on the floor.

Lighting and the Colour of the School Walls.

School room furniture should not only be adapted to each student, but should be arranged in the room so that the students face a blank wall with the best light coming from the left. If school children sit facing windows and doors each day throughout the year the glare will have a harmful effect on their eyes. The attention of the students is also distracted by outside objects. The direct rays of the sun should be prevented from entering the room, especially on a desk or seat with an occupant. Windows or doors should be shaded when necessary.

The colour of the walls is important when considering school room lighting. White walls do not absorb light and therefore cause a glare which, if not actually harmful to the eyes, has an irritating effect which interferes with the comfort of the students. Light buff coloured walls are more suitable, as buff colour absorbs enough light to eliminate the glare, and the general effect is stimulating. Blue, green and darker colours should not be used as they absorb too much light and tend to have a depressing effect.

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[2] Fletcher B. Dressler. *School Hygiene,* p. 95.

Blackboards.

The important things to consider regarding blackboards are: location, height, colour and cleanliness. Blackboards should never be placed between windows unless absolutely necessary. Most of the blackboard work of the students should be done upon boards opposite the windows.

Following are suggestions from Ayres, Williams and Wood[1] as to the proper height of blackboards:—

Classes 1 and 2	...	24 inches from the floor.
,, 3 ,, 4	...	27 ,, ,, ,, ,,
,, 5 ,, 6	...	30 ,, ,, ,, ,,
,, 7 ,, 8	...	32 ,, ,, ,, ,,
High School	...	36 ,, ,, ,, ,,

'In each case the distance from the floor is determined by the height at which smaller pupils in each grade are able comfortably to write up the blackboard . . . . The teacher's board at the front of the room should be thirty-six inches from the floor.'

The common practice is to use slate blackboards with white chalk, although other kinds are in use. It is essential that the boards be kept clean so that the writing shows up clearly and the students are not required to strain their eyes unnecessarily.

Water.

Water is the most dangerous vehicle of infection, as it passes through the stomach with great rapidity. All water supplies for schools should be free from disease germs and dirt and entirely above suspicion.

While many schools in the larger cities of India have tap water supplied, a majority of schools rely upon wells and tanks for their drinking water. Pure drinking water should be available in every school at all times during school hours. If wells are used, the top should be protected so that impurities cannot enter. There should be no manure or rubbish piles near the well as impurities seep through the ground into the well. If water is not available at the school

[1] Ayres, Williams and Wood. *Healthful Schools*, p. 54.

it should be carried to the school in gamlas by the servants and should be left in a shady spot with the tops covered so that dust and dirt cannot enter. The gamlas should be cleaned and aired frequently.

Disease is spread by the use of the common drinking cup. Each student should have his own personal cup available at the school for his own use, and the use of a community cup discouraged. Drinking cups should not be used for taking the water from the gamla. A dipper should be provided for this purpose alone.

Water should also be available for bathing purposes after games and exercises and for the use of hostel students. Students should be taught the danger of allowing water from their bodies to flow back into the well or tank if it is used for drinking purposes. Bathing directly in the tank should be discouraged. Even if it is not used for drinking purposes, it is more sanitary not to clean the body directly in the tank, as a person with an infectious disease can easily spread it to others in this manner.

Latrines and the School Compound.

If schools lack latrines or have unsanitary latrines, the students will use the school compound. This not only creates an unwholesome environment, but is one cause of the spread of disease. Hookworm may spread in this way. The germs enter the soles of the feet of people who step in unclean places which have been used by people having hookworm. For that reason latrines should be available in every school and supervised daily for cleanliness, and the students taught the advisability of using them.

The school compound, especially where the students play and exercise, should be kept clean and free from stones and other obstacles. In the winter and summer seasons, if abundant water is available, a good plan is to sprinkle the compound with water about one-half hour before it is to be used for physical activities. Trees should be planted in the compound to afford shade and efforts should be made to beautify the surroundings.

Mosquito Control.

Educational institutions can do a great deal to check the spread of malaria. Practical experiments should be carried out and the students educated regarding this disease. Stagnant water, such as small pools, tanks and unused wells, in which mosquitoes breed, should be sprinkled with kerosene oil about once a week.

Many people sleep with their heads covered in order to keep mosquitoes and other insect pests away. This practice is decidedly harmful, for during eight hours of each twenty-four stale air is breathed. Lack of fresh air often leads to serious pulmonary diseases, chiefly tuberculosis of the lungs. However, some sort of protection from insects is necessary if one is to sleep with the head uncovered. Mosquito nets are the best solution to this problem, but they are expensive. An interesting experiment in this connection was tried at the Spence Training College, Jubbulpore, with gratifying success. Arrangement was made with a local cloth dealer to supply nets and receive payment for them in three monthly instalments. A sum was deducted from the stipends of those students desiring to buy nets each month until the cost of the net was paid. The first year fifty-two nets were sold in this way. This plan is excellent and may be tried in normal schools and in other institutions where the students receive stipends.

Another plan is to cover the hostel windows and doors with netting, but this is not as effective as when each student has his own net. Ideally both window nets and sleeping nets should be used.

First Aid Kit.

Cuts and wounds must be attended to immediately in order to check any possible infection which may result. Other emergencies arise, such as cases of grit in the eye, fainting, poisoning, etc., and for all of these emergencies a well-equipped first aid kit should be in every school. Much of the soil in India is septic and therefore ground bruises easily become infected. As students are frequently bruised

in games and sports immediate treatment at the school should be possible. A first aid kit should contain the following:—

Scissors for cutting and shaping dressings and bandages.
Tweezers for removing splinters and foreign bodies from wounds.
Safety pins or needle and thread for holding bandages in place.
Absorbent cotton for covering wounds, absorbing discharges, etc.
Dressing gauze for direct application to wounds, for dressing, padding, etc.
Roller gauze bandage for holding dressing or splints in place.
Tourniquet to stop bleeding from arterial wounds.
Carbolized petrolatum for burns, scalds, etc.
Camphenal, an antiseptic for normal dressing.
Iodine for an antiseptic.
Splints for fractures.
Aromatic spirits of ammonia as a stimulant for fainting and shocks.
Adhesive plaster for holding bandages in place, for sprains, etc.
A copy of the *Indian Manual of First Aid,* by Colonel Robert J. Blackham.

Age Segregation in Hostels.

Boys may be divided into three physiological groups: (1) the pre-pubescent group, boys under 12 or 13 who have not reached adolescence ; (2) the pubescent group, boys approximately between the ages of 13 and 16 who have reached pubescence and are in the adjusting period ; (3) the post-pubescent group, boys over 16 who are usually well past the pubescent stage.

Each group should have a separate sleeping room, or, if this is impossible, group (1) should be separate and groups (2) and (3) combined. In this way young boys are protected as long as possible from acquiring base habits and ideas which are prevalent among older boys and which are detrimental to physical, mental and moral development, since most of these habits and ideas are communicated in the evening after the routine of the day is over.

Hygienic Feeding in Hostels.

The problem of providing well-balanced diet with the available funds is indeed a difficult one and cannot be covered thoroughly in a book of this type. The fact that a well-balanced diet is required by every boy and girl if he is to grow and develop normally is well known. Poor and unclean

food is perhaps the commonest cause of disease and mental deficiency and the whole problem of nutrition is most pressing. The diet in hostels should be an example to students of the right kinds of food to eat and should be prepared according to modern scientific knowledge. In addition to this, facts about nutrition should be taught in the school curriculum and an effort made to induce parents to correct errors in diet.

The amount of food that should be eaten and, to some extent, the kinds of food, depend upon age, sex, area of abode and the amount of work or exercise performed. Boys and girls between the ages of twelve and sixteen require as much or more food in proportion to body weight than is required by men and women. Boys and men usually need more than girls and women.

Food is divided into three main groups: those needed for growth and repair ; those required for energy ; those needed to keep the body well-regulated.

I. Growth and Repair Foods.—

These are called proteins and mineral salts. They are the substances out of which the " body bricks " or actual tissues of the body are made. For that reason growth and repair of the body are impossible without these foods, which also contain energy-producing ingredients. In childhood and during the period of life before the individual reaches full growth the proper amount of protein and mineral salts is necessary. In the adult the chief function of these foods is to repair or build up the tissues which are naturally breaking down.

Proteins are classified in two groups: animal and vegetable. Animal proteins are found in such foods as milk, meats, eggs and fish, and vegetable proteins are found most abundantly in such foods as dal, grains, nuts and peas. The value of a protein depends much upon the types of amino-acids which it contains. Some proteins are suitable in every way for the body, for instance, those found in milk. Others are not entirely suitable and still others are unsuitable.

Following are common foods classified according to the adequacy of their porteins:[1]

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[1] I am indebted to the books, *Food*, by Robert McCarrison and *The New Dietetics*, by John Harvey Kellogg, for the classifications of proteins and mineral salts.

Foods containing adequate proteins: milk, butter-milk, curds, meat, fish, eggs, cheese, kidney, liver, sweet-breads, green vegetables, spinach, watercress, sorrell, the young shoots of edible plants, and atta to some extent.

Food containing less adequate proteins: atta, oat-meal, barley, unpolished rice, cambu, cholam, ragi, peas, dal, gram, nuts, potatoes, carrots, turnips, parsnips, sago, artichoke, beetroot, fruits, vegetables of all types except green leafy ones.

Foods containing inadequate proteins: polished rice, maize, tapioca, white flour.

Foods containing no protein: sugars, animal fats and vegetable oils ; for example, gingelly oil, arachis oil, mustard oil, linseed and cocoanut oils.

Mineral salts are found chiefly in the hard tissues of the body, but to some extent in the soft parts also. About four per cent of the entire body is composed of this material. Mineral salts are necessary for health and normal development. They play an important part in the building of bones and teeth and have important work to do in the blood, muscles and vital organs. These are calcium, common salt, iron, phosphorus, iodine and chlorine. The calcium salts furnish material for the growth of the skeleton and also have an important relationship to the irritability of the muscles and nerves. Sodium chloride or common salt is found chiefly in the blood and the quantity must remain constant. All animals have a craving for the salt, as the blood is continually losing some of its supply. However, most people eat too much of it. Iron is valuable because it is necessary for the production of new haemoglobin in the blood. Haemoglobin is found in the red blood corpuscles and carries oxygen from the lungs to the tissues. Iodine is required by the thyroid gland and an insufficient amount of it causes goiter. Phosphorus is very necessary for the bones and teeth and is found in the blood and in the tissues.

Foods rich in calcium (lime) are: milk, buttermilk, cheese, whey, yolk of egg, dals, fruits, green leafy vegetables. The best calcium food is milk and every effort should be made to feed children at least a pint a day.

Foods containing appreciable amounts of iron are: red meat, liver, eggs, dals, whole cereal grains, spinach, leeks, lettuce, radishes, strawberries, artichokes, water melons,

asparagus, celery, cucumbers, dandelions, turnip leaves, tomatoes, molasses, beans—lima and dried, almonds.

Foods rich in phosphorus are: milk, buttermilk, eggs, soya beans, dals, nuts, wheat, oats, barley, cholam, ragi, water-cress, spinach, radishes, cucumbers, carrot, cauliflower, brussells sprouts, meat and fish.

Iodine is found in sea fish and oils from their livers. Green leafy vegetables and fruit usually contain enough for our needs. The water in which vegetables are boiled should be used because this usually contains valuable mineral salts.

Foods containing plenty of chlorine are: bananas, dates, pineapples, peanuts, celery, lettuce, spinach, tomatoes and green leafy vegetables. Sodium chloride or common salt also is a source of this element, but should be used sparingly as too much may have harmful effects on the body, particularly the kidneys and the arteries. However, vegetarians should be sure to add some salt to their food as there is an insufficient amount of sodium in their diet. Meat eaters require less, as meat contains sodium.

II. Energy-producing Foods.—

These supply energy for muscular work and are divided into three groups: starches (carbohydrates), sugars and fats. The body requires a larger quantity of energy-producing foods than foods of other types because a large amount of energy is expended in performing each day's activities. Starches are eaten in the largest amounts, fats next, and sugars, which are highly concentrated, least. As far as price is concerned, starches are the cheapest, sugars next in price, and fats the most expensive.

The largest amounts of starches and sugars come from vegetable foods. Animal foods, such as cheese, liver, kidney and fish roe, contain small amounts, while milk contains it in the most satisfactory proportions. Sugars are found in most vegetables and fruits in greater or smaller quantities. Those of a highly concentrated nature, such as white sugar, should not be eaten in large quantities as they are more difficult to digest than those found in vegetable foods. Starchy foods are more easily digested and are therefore eaten in larger quantities.

Fats are found in animal and vegetable foods, but animal

fats are considered the best for nourishing the body as they contain Vitamin A which is not found, except occasionally in very small quantities, in vegetable fats. Fat is found in most vegetables except those of a highly concentrated nature such as sugarcane and sugar beats. Twice as much energy is found in fats as is found in other foods.

Following are lists of typical energy-producing foods. It must be remembered that they contain other important elements required by the body besides carbohydrates and fats.

Starches.	Sugars.	Fats.
Rice.	White sugar.	*Animal*:
Maize.	Brown sugar.	Milk.
Barley.	Gur.	Fat from flesh foods.
Ragi.	Sugarcane.	Butter.
Wheat.	Honey.	Ghee.
Oats.	Dates.	Egg yolk.
Cambu.	Most fruits.	Cream.
Cholam.		Cheese.
Potatoes.		Liver.
Bananas.		Fish.
Sago.		Fish oils.
Tapioca.		*Vegetable*:
Suji.		Gingelly oil.
Root vegetables.		Olive oil.
Dals and grams.		Almond oil.
Soya beans.		Cocoanut oil.
Nuts.		Ground-nut oil.
Dried peas.		Linseed oil.
Beans.		Cotton-seed oil.

III. Body-regulating Foods.—

Not only does the body require food for growth, repair and energy, but it also needs food to keep it well-regulated. A motor car requires petrol for energy and occasionally a new part, and greasing and oiling are also necessary if it is to run smoothly. Similarly the body needs regulating foods. These are divided into the following classes by Fisher and Fisk: mineral salts, bulk foods, water, hard foods, vitamins.[1]

Mineral Salts.—Found in most fruits and vegetables.

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[1] Fisher and Fisk. *How to Live*, pp. 28-60.

Bulk Foods.—Peas, beans, lettuce, cabbage, watercress, cauliflower, leaves and skins of plants and the pulp of fruits. The body requires food which contains roughage, that is, material which may have little or no food value, but which gives the intestines work to do. Many foods contain no roughage and when the diet consists of these alone constipation often results.

Water.—An important regulating food. It should be drunk in fairly large quantities, a quart or more a day. Because water may be a conveyer of disease, especially enteric, care should be taken to see that it is pure.

Hard Foods.—Fibrous vegetables, fruits, nuts, celery. These give the teeth and jaws vigorous exercise.

Vitamins.—Certain foods contain indefinable substances called vitamins which are necessary if the body is to be healthy. These are divided into Vitamins A, B, C, D, E, and others about which little is yet known. When one or more of these is lacking in the diet the result is deficiency disease, such as scurvy, beri-beri or nervous disorders. Vitamins cannot be seen even with the microscope, but experiments have proven that they exist in various foods. For instance, it is proven that milk contains Vitamin A and this is destroyed when the milk is over-heated. The covering on rice contains Vitamin B and this is lost when the rice is polished. Vitamin C is found in fresh fruit juices and in green leaves. Butter, ghee, cod-liver oil and sunlight provide Vitamin D. Lean meat, whole wheat and certain vegetables contain Vitamin E.

The following foods[1] *are excellent or good sources of vitamins* :—

E—Excellent. G—Good.

Vitamin.	A	B	C	D	E
Whole milk	E	G	...	E	...
Egg yolk	E	...	...	G	...
Cod-liver oil	E	...	...	E	...
Fish oils	E	...	...	E	...
Liver oils	E	...	...	...	...
Butter	E	...	...	E	...
Ghee	E	...	...	E	...
Fish roe	E	...	...	...	...
Animal fast	E	...	...	...	...
Liver	E	...	...	...	...
Kidney	E	G	...	...	...
Swede	...	G	...	...	...
Brain	...	G	...	...	...
Heart	...	G	...	...	...
Lean meat	...	E	...	...	...
Eggs	G	E	...	...	...
Orange juice	...	...	E	...	...
Lemon juice (fresh)	...	...	E	...	...
Pineapple juice	...	...	G	...	...
Swede juice	...	...	E	...	...
Prickly pear	...	...	G	...	...
Orange peel	...	...	G	...	...
Sweet potato	G	...	...	...	...

Vitamin.	A	B	C	D	E
Cambu	...	G	...	...	...
Oats	...	G	...	...	E
Ragi	G	...	...	...	...
Beans, string, fresh raw	G	G	G	...	...
Peas	...	G	...	...	...
Dals	...	G	...	...	...
Gram	...	G	...	...	...
Soya bean	...	G	...	...	...
Sprouted beans	...	...	E	...	...
Sprouted peas	...	...	E	...	...
Sprouted dals	...	...	E	...	...
Sprouted gram	...	...	E	...	...
Carrots	G	...	...	...	...
Turnips	...	G	...	...	...
Onions	...	G	...	...	...
Mushroom	...	G	...	...	...
Dandelion	...	G	...	...	...
Asparagus	...	E	...	...	...
Celery	...	...	G	...	...
Tomatoes	G	E	E	...	...
Parsley	...	G	...	...	...
Watercress	...	E	G	...	...

(*Continued to next page*)

[1] This table is compiled from data in *Food*, by Robert McCarrison and *The New Dietetics*, by John Harvey Kellogg.

(*Continued from previous page*)

E-Excellent. G—Good.

Vitamin	A	B	C	D	E
Lettuce	E	E	G	...	E
Spinach	E	...	E	...	...
Potato, white raw or cooked	...	G	G	...	...
Raw carrot	...	...	E	...	...
Cabbage	E	G	E	...	...
Yellow maize	G	E	...	...	E
Wheat (atta)	...	G	...	...	...
Barley	...	G	...	...	...

Vitamin	A	B	C	D	E
Cholam	...	G	...	...	...
Celery Leaves	E	E	...	...	...
Turnip tops	E	E	G	...	...
Radish tops	E	E	...	...	...
Beetroot tops	E	...	...	...	...
Bamboo tops	E	...	...	...	...
Lucerne tops	E	...	...	...	...
Walnuts	...	E	...	...	...
Yeast	...	E	...	...	...

Unpolished rice has small amounts of Vitamins A and B ; polished rice has no Vitamin A and very little Vitamin B.

Preparing a Well-Balanced Diet.

A summary of the three divisions of food required by the body has been given. The problem is to provide the right types of food in suitable amounts to make possible the maximum growth and efficiency of the body. The importance of this is shown by an experiment made by Dr. H. C. Corry-Mann[1] which was given in a report to the Privy Council Medical Research Council, London, in 1926. One group of boys were fed the ordinary diet as follows: Breakfast—porridge, 10 to 16 ounces ; treacle, 1 ounce ; bread, 3 to 3½ ounces ; margarine, ⅛ to ¼ ounce ; cocoa, 10 ounces. Dinner—fish, herring, 2½ to 3½ ounces, or kipper, 2 to 3 ounces ; bread, 3 to 3½ ounces ; cocoa, 10 ounces. Tea—bread, 6 to 6½ ounces ; margarine, ¼ to ½ ounce ; jam, ¼ to ½ ounce ; cocoa, 10 ounces. There were seven other groups, each being fed the ordinary diet and one extra item of food. Group two were given one pint of milk extra ; group three, 3 ounces of castor sugar ; group four, 1¾ ounces of butter ; groups five and six, ½ to ¾ ounce watercress ; group seven, casein (principal protein of albumen of milk), ¾ ounce ; group eight, ¾ ounce margarine. The experiment extended over a period of five years. The results were as follows[2]:

"Boys receiving only the basic diet gained an average of 3.85 pounds per boy and grew an average of 1.84 inches in a year.

"Boys receiving daily an additional pint of fresh cow's milk gained 6.98 pounds and 2.63 inches per boy.

"Boys receiving an additional 3 ounces of castor sugar daily gained 4.93 pounds and 1.94 inches per boy.

"Boys receiving an additional 1¾ ounces of grass-fed New Zealand butter gained 6.30 pounds and 2.22 inches per boy.

"Boys receiving an additional 1¼ ounces of vegetable margarine gained an average of 5.21 pounds and 1.84 inches per boy.

"Boys receiving an additional ¾ ounce of edible casein gained an average of 4.01 pounds and only 1.76 inches per boy.

"Boys receiving an additional ¾ ounce of fresh watercress gained 5.42 pounds and 1.70 inches per boy."

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[1] Quoted by Charles Banks. *Physiology, Public Health and Psychology,* pp. 35-36.

[2] Charles Banks. *Ibid.,* p. 36.

These figures show the important relation of diet to growth and the necessity for providing a well-balanced diet for school children. There is a difference of opinion regarding the proportions of foods which should be included in the diet, but, generally speaking, a balanced diet contains from 10 to 15 per cent protein, 20 to 30 per cent fat and 60 to 65 per cent carbohydrates (starches and sugars). Most foods contain some of each of these elements and so the proportions have to be figured according to tables of foods showing the proportions of each element in each type of food. An excellent table of this kind may be found in Lieut.-Colonel Robert McCarrison's book, *Food*, published by Macmillan & Company, Limited.

In addition to providing the correct proportions of protein, fat and carbohydrates in the diet, the right amount of calories should be provided. A calorie is the amount of heat required to raise the temperature of one gram of water one degree Centigrade. For instance, a large banana and a medium-sized potato each contain about 100 calories. In estimating the heat value of foodstuffs the following figures are used by Howell[1]:

1 gram protein equals ...	4100 calories	(4.1 C)
1 gram carbohydrates (starch) equals ...	4100 ,,	(4.1 C)
1 gram fat equals ...	9305 ,,	(9.3 C)

The caloric value of food, then, is found by multiplying the number of grams of protein by 4.1, the number of grams of carbohydrates by 4.1 and the number of grams of fat by 9.3.

Opinions differ somewhat regarding the number of calories required each day. Dr. Felt mentions that a daily diet suggested a few years ago for children in North India was as follows[2]:

Age ...	4 years.	8 years.	12 years.	Adult.
Weight ...	34 lbs.	44 lbs.	72 lbs.	120 lbs.
Calories per lb. ...	34	28	22	20

[1] William H. Howell. *A Text-Book of Physiology*, p. 941.
[2] F. R. Felt. *Diet and Food Values*, p. 1.

Sherman gives the following figures[1]:

Ages 6 to 9	...	36 to 32	calories per lb.
,, 10 ,, 13	...	34 ,, 27	,, ,,
,, 14 ,, 17	...	30 ,, 32	,, ,,
,, 18 ,, 25	...	25 ,, 18	,, ,,

The diet should contain body-regulating foods, especially vitamins, in sufficient quantities as well as having the right proportions of protein, fats and carbohydrates. Green vegetables and fruits are rich in vitamins and no diet is complete without these foods.

Lieut.-Col. McCarrison states that that the right dietary for Indian children is made up of the following[2]:

1. Any whole cereal grain or mixture of cereal grains.
2. Plenty of milk and the products of milk—curds, butter-milk, butter, ghee.
3. Sprouted pulses.
4. Eggs or liver, or meat, or fish occasionally if religion permits their use.
5. Tuber and root vegetables.
6. Abundance of green leafy vegetables.
7. Fruit.

"These are the things with which the appetite should be satisfied; the things that should be eaten for health's sake. What else is eaten does not greatly matter so long, as it is simple, clean, easily digestible and well prepared and so long as the proper balance of food in proteins, fats, carbohydrates, mineral salts and vitamins is maintained."

A number of dietaries has been suggested by experts for people in India. Following are some of these:

1. Mr. Jahar Lal Das,[3] Personal Assistant to the Director of Public Health, Bihar and Orissa, gives many helpful suggestions regarding diet. He states that a diet

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[1] H. C. Sherman. *Chemistry of Food and Nutrition,* p. 232.
[2] Robert McCarrison. *Food,* p. 107.
[3] Jahar Lal Das. *Notes on the Dietary of Scholars,* pp. 1-15.

of dal and bhat is not well balanced as it contains too little protein, fat, vitamins and other necessary elements and too much starch. He further states that husked and polished rice loses its most nutritive elements. Dal, too, which is the chief source of protein, loses much of its vitamin content when it is boiled for too long a time. He recommends the following dietary:

Foodstuffs.	Quantity in ounces.	Nitrogen in grams.	Carbon in grams.	Calories or units of energy.
Rice	8	32	1,280	788
Flour	8	66	1,330	800
Pulses or dal ...	4	68	624	430
Potatoes	5	8	226	157
Other vegetables ...	4	16	115	42
Mustard oil ...	1	...	217	138
Gram	3	55	480	324
Gur or sugar ...	2	...	178	256
Salts, spices, etc. ...	1	...	...	...
Totals ...	36	245	4,450	2,935

"The above dietary contains 2.9 ounces of protein, 1.8 ounces of fat and 19.46 ounces of carbohydrates."

Mr. Das further recommends that the total diet of 36 ounces be divided into four parts and that gram be given as light refreshment in the morning and evening with a little salt or gur. The gram, however, should be used after soaking and germination, as dried gram is poor in vitamins. Twenty-four hours are required for soaking the gram in a little water. Mr. Das states that 6 to 8 ounces of milk should be added to this diet if possible and the rations of rice, flour, potatoes or gram, in that case, curtailed. This diet costs between Rs. 7-8-0 and Rs. 8-0-0 per month and, with the additional charges of fuel, servants, etc., will amount to about Rs. 10-0-0 per month.

2. McCarrison suggests the following as used by certain races of North India as a well-balanced diet for a man[1]:

Foodstuffs	Amount in ounces	In Grammes Proteins	Fats	Carbo-hydrates	Calories
Atta	12	46.80	6.48	244.2	1,222
Rice: home-pounded	6	13.80	0.51	133.8	595
Meat (Mutton) ...	2	11.94	3.96	0.0	84
Milk	20	18.80	20.40	27.2	360
Vegetable oil ...	1	0.0	28.00	0.0	252
Ghee	1.5	0.0	34.60	0.0	312
Root vegetables ...	8	4.40	0.36	31.8	148
Cabbage	8	3.10	0.24	10.2	56
Mango	4	0.16	0.88	20.8	92
Dal	1	6.50	0.99	16.2	100
	63.5	105.50	96.42	484.2	3,221
Less 10% for waste	6.3	10.5	9.64	48.4	322
Total ...	57.2	95.00	86.78	435.8	2,899

In this dietary "the proteins and fats are derived from both the animal and vegetable sources, the mineral salts and vitamins are present in abundance, and there is enough cellulose for the proper action of the bowels."

3. Mr. B. N. Ghosh recommends the following diet as suitable for the average Indian, provided whole meal atta is used and the rice is unpolished[2]:

Rice	8 ounces.
Atta	6 ,,
Dal	4 ,,
Oil or ghee	3 ,,
Fish	4 ,,
Vegetables	6 ,,
Milk	12 ,,

He suggests that 8 ounces of meat may be added to this diet once or twice a week.

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[1] Robert McCarrison. *Loc. cit.*, p. 113.

[2] Birendra Nath Ghosh. *Hygiene and Public Health*, p. 191.

4. The Board of Education of the Methodist Episcopal Mission of Upper India gives the following dietary in its Rules and Regulations:[1]

"Morning meal	...	Chapatis and Dal, daily, Dal and Rice or Kicheri once a week.
"Evening meal	...	Chapatis and Meat twice a week. Chapatis and Vegetables five times a week.

"Average amounts to be given per head, per day:

		Atta.	Dal.	Vegetables.	Meat.
Boys	...	8 chattaks.	½ chattak.	2½ chattaks.	2 chattaks.
Girls	...	7 chattaks.	½ chattak.	2½ chattaks.	2 chattaks.

"Good mustard oil should be issued at the rate of 12 chattaks per 100 children; salt at 12 chattaks per 100; ghee for dal at 1½ chattaks per 100 or 8 chattaks for kicheri. Extra dal may be given when rice is served. Gur or other sweets may be given twice a week at 7 seers per 100.

"The morning dal may be varied, using Urad, Arhar, Moong, Chana and Masur. During the rains mixing one part chana with two parts wheat flour once a day makes a wholesome bread."

5. After an extensive study and investigation of diet in the jails of Bengal, Bihar and the United Provinces, Major D. McCay recommends the following:[2]

FOR BIHAR JAILS.

		Ounces	C Proteins	C Fats	C Carbo-hydrates	Total C
Burma or country rice	...	18	93	28	1121	1242
Wheat atta ...	...	10	127	53	846	1026
or						
Makkai atta ...	...	12	141	29	978	1148
Different dals in use	...	5	139	30	326	495
Vegetables ...	...	6	10	2	64	76
Total with Wheat	...	39	369	113	2357	2839
,, with Makkai	...	41	383	89	2489	2961

[1] Board of Education, Methodist Episcopal Mission of Upper India. *Rules and Regulations*.

[2] Government of India. *Scientific Memoirs*, No. 37, 1910. The calories are calculated by Dr. F. R. Felt and appear in *Diet and Food Values*, pp. 5-6.

The above diet is given for five days of the week ; for the remaining two days the following is used:

	Ounces	C Proteins	C Fats	C Carbo-hydrates	Total C
Rice	12	93	28	1121	1242
Wheat atta ...	8	101	42	677	820
or					
Makkai atta	10	118	25	815	958
Dal	4	111	24	261	396
Vegetables ...	6	10	2	64	76
Fish or goat flesh ...	5	119	46	...	165
Total with Wheat ...	35	434	142	2123	2699
,, with Makkai ...	37	451	125	2261	2837

	Ounces	C Proteins	C Fats	C Carbo-hydrates	Total C
Burma or country rice ...	18	140	42	1682	1864
Wheat atta ...	4	50	21	338	409
or					
Fish twice a week ...	4	84	30	...	114
Dals	4	111	24	261	396
Vegetables	6	10	2	64	76
Total with Wheat ...	32	311	89	2345	2745
,, with Fish ...	32	345	98	2007	2450

For the Jails of the United Provinces

The following are suggested as alternative diets:

I. Wheat	... ...	10½	chattaks,	giving	11.70	grams	nitrogen.	
Arhar	... ...	2	,,	,,	4.05	,,	,,	
Vegetables	... ...	3	,,	,,	0.5	,,	,,	= 16.25
II. Wheat	... ...	10½	,,	,,	11.70	,,	,,	
Gram	... ...	1½	,,	,,	2.55	,,	,,	
Arhar	... ...	1	,,	,,	2.02	,,	,,	
Vegetables	... ...	3	,,	,,	0.5	,,	,,	= 16.77
III. Wheat	... ...	8	,,	,,	8.91	,,	,,	
Barley	... ...	3	,,	,,	2.48	,,	,,	
Arhar	... ...	2	,,	,,	4.05	,,	,,	
Vegetables	... ...	3	,,	,,	0.5	,,	,,	= 15.95
IV. Wheat	... ...	7	,,	,,	7.80	,,	,,	
Makka	... ...	4	,,	,,	3.55	,,	,,	
Urad Dal	... ...	1	,,	,,	2.07	,,	,,	
Arhar	... ...	1	,,	,,	2.02	,,	,,	
Vegetables	... ...	3	,,	,,	0.5	,,	,,	= 15.95
V. Wheat	... ...	8	,,	,,	8.91	,,	,,	
Juar	... ...	4	,,	,,	2.85	,,	,,	
Arhar	... ...	2	,,	,,	4.05	,,	,,	
Vegetables	... ...	3	,,	,,	0.5	,,	,,	= 16.31

VI.	Wheat	8	chattaks,	giving	8.91	grams nitrogen.	
	Bajra	3	,,	,,	2.43	,, ,,	
	Arhar	2	,,	,,	4.05	,, ,,	
	Vegetables	3	,,	,,	0.5	,, ,,	= 15.89
VII.	Wheat	8	,,	,,	8.91	,, ,,	
	Narua	4	,,	,,	2.71	,, ,,	
	Urad Dal	1	,,	,,	2.07	,, ,,	
	Arhar	1	,,	,,	2.02	,, ,,	
	Vegetables	3	,,	,,	0.5	,, ,,	= 16.23

6. A committee appointed by the Medical Council of the Methodist Episcopal Church recommend the following:[1]

AMOUNT OF FOOD IN EACH ARTICLE OF MENU.

Amount of atta in 1 chapati	... ...	2 oz.
,, ghee used each time	...	½ oz.
,, milk for choti hazri	...	8 oz.

Sunday	oz.	*Monday*	oz.
Rice	3 3/7	Vegetable in bhujia ...	9
Dal	1 1/3	Gur	2
Raw carrots	1	Dahi	4
Dahi	4	Rice	3 3/7
Peanuts	2	Charbi	¼
Potatoes	2	Meat	4
Sag	8	Radishes	1
Tuesday		*Wednesday*	
Dal	1 1/3	Rice	3 3/7
Rice	3 3/7	Dal	1 1/3
Vegetable in bhujia ...	4	Raw carrots	2
Guava	2	Gur	2
Dahi	4	Potatoes	2
Eggs	1 3/7	Meat	4
Potatoes	2	Vegetables in curry ...	8
Sag	5		
Onion	1		
Thursday		*Friday*	
Dal	1 1/3	Dahi	4
Baigan	8	Basin	1
Dahi	4	Raw turnips	2
Gram	1	Gur	2
Rice	3 3/7	Bananas	2
Liver	4	Rice	3 3/7
Raw tomatoes ...	2	Vegetable in bhujia ...	8
Charbi	¼	Charbi	¼

Saturday	oz.
Potatoes	2
Tomatoes	2
Sag	7
Dahi	4
Peanuts	2
Rice	3 3/7
Meat	4
Raw carrots	1

[1] *Report of Committee on School Diets*, Medical Council of the Methodist Episcopal Church, India.

Days.	Choti Hazri.	Hazri.	Tiffin.
Sunday ...	1 Chapati 1 Pao milk	Kicheri with ghee. Raw carrots.	1 Chapati. ½ Pao dahi. Peanuts.
Monday ...	Do.	4 Chapatis and ghee. Baigan and cauliflower. Bhujia.	1 Chapati and gur. ½ Pao dahi.
Tuesday ...	Do.	Dalbhat with ghee. Vegetable curry. Tomato and baigan.	1 Chapati. ½ Pao dahi. Guava.
Wednesday ...	Do.	Kicheri with ghee. Raw carrots.	1 Chapati. ½ Pao dahi.
Thursday ...	Do.	4 Chapatis and ghee. Dal-baigan curry.	1 Chapati. ½ Pao dahi. Gram.
Friday ...	Do.	2 Chapatis and ghee. Dahi and basin curry. Raw turnips.	1 Chapati and gur. Banana.
Saturday ...	Do.	4 Chapatis and ghee. Potatoes and sag. Raw tomatoes.	1 Chapati, peanuts. ½ Pao dahi.

Days.	Dinner.	Protein.	Fats.	Carbo-hy-drates.	Calories.	Cost.
Sunday ...	4 Chapatis. Potatoes and sag. Raw radishes.	87.48	71.63	363.5	2429	0—5—1
Monday ...	Palao, meat. Curry, charbi. Raw onions.	87.83	66.93	361.0	2350	0—3—10
Tuesday ...	4 Chapatis. Eggs curry. Potatoes and sag. Raw turnips.	80.55	65.53	358.28	2244	0—5—8
Wednesday ...	4 Chapatis. Meat and vegetable curry. Turnips, potatoes and tomatoes.	96.89	60.54	396.0	2491	0—5—7
Thursday ...	Rice, liver curry. Charbi. Raw tomatoes.	99.64	67.86	350.41	2369	0—5—2
Friday ...	Rice, cabbage and carrots and baigan bhujia.	72.28	60.59	384.16	2320	0—3—8
Saturday ...	Rice, ball curry. Raw carrot.	101.01	77.45	353.1	2460	0—3—10

NOTE—(1) 10 per cent waste has been deducted in estimating food values.

(2) The above school diet was approved by Colonel Robert McCarrison. He suggests that half a pint of butter-milk per child per day would conduce to the improvement of the health of the children on this diet.

"It was not possible in one week's menu to include all of the various vegetables and all possible satisfactory food combinations. Those given are suggestive combinations.

" For tiffin one might well use, in season, the various raw fruits and vegetables, melons, sugarcane, nuts, raw and roasted grams or dals, boiled sweet potatoes, sprouted grains (see *Food*, by Colonel Robert McCarrison, page 56) and dried fruits, Indian sweets, popped rice and corn.

" Decrease the amount of peppers used. Tea and coffee should not have a place in the diet of a child. Spices are not mentioned, because they have no food value, but they are valuable as appetisers. Serve chutneys, limes, mangoes, etc., onions and tomatoes sliced fine with lime-juice with the food. It makes a meal more pleasing.

" Give as wide a variety of food as possible. Give some fresh raw fruit or vegetable every day. All citrus fruits are valuable foods. Use fruits, melons and vegetables in season. Children should be taught to eat leafy vegetables as well as root vegetables raw. Use butter-milk when available. It is often obtainable at a low price from large private and military dairies.

" Unpolished rice is cheaper and has more food value than polished rice. The price of polished rice is given in these menus, as the price of unpolished could not be obtained in these cities.

"Increased activity and cold weather calls for an increased amount of food. In hot weather, the amount of oil used should be lessened and the amount of vegetables and fruits increased. Sour milk might well be used in various dishes. Some animal foods should be given every day, as milk, eggs or meat.

" Fats—animal fats—are necessary for children, so whole milk and not skimmed milk should be used."

Food at Mid-day.

The usual practice among middle and high school boys is to eat the morning meal between 9 A.M. and 10 A.M., begin school at 10-30 and remain there until 4 or 4-30 P.M. with a 30 to 40 minutes recess period at mid-day. After the morning meal no food is taken until evening. This means that boys go for six or more hours without food. At the close of the school day they are usually tired and hungry and are made to play games and perform exercises in this condition. There can be no doubt that this daily regime is undesirable. Even if the boys did not exercise at school the situation would not be remedied, for if they ate a meal between 4-30 and 6 they would be unfit for exercise until between 6 and 7 which would interfere with their evening studies. Refreshments at mid-day are neces-

sary if this undesirable situation is to be remedied. However, caste, poverty and other difficulties interfere with the solution of the problem. The two following suggestions do not entirely surmount the difficulties, but might prove feasible:

(1) Have morning and evening school with a long break at mid-day, allowing the students time to go home for their meal. If this plan is followed the physical instructional period should be in the morning and the games period in the evening. Boys living a long distance from school should either bring their lunch or have it prepared for them at the school.

(2) Provide at school at a minimum cost a light lunch to be eaten during the forty-minute recess period. Some may prefer to carry a lunch to school. A Brahmin cook could be employed to prepare this. He would be a part-time worker and could be secured at a nominal cost. The food would be low in price when large quantities are bought. In Mohammedan and Christian schools there would be no difficulty about the preparation of the food. This plan would depend upon the ability and willingness of the parents to pay for their children's lunch at school. The lunch fee should be considered in the same light as any other school fee, such as games fee.

Whichever plan is followed, there can be no doubt that something should be done about this important matter. The school is responsible for the physical as well as the mental development of the students and a school schedule which may be harmful to them physically should not be accepted by society.

Personal Cleanliness.

Personal cleanliness is a habit which should be acquired by every student and it should be considered as important as discipline, punctuality and other things expected of each student. An ingrained habit of this type is not only an added protection against disease, but will add to the mental efficiency and general health tone of the class room. The clothing and body of each student can be kept clean at little or no expense, which makes the enforcement of this ideal possible in every school.

One method of enforcing personal cleanliness is the daily morning inspection by the teacher. Following is the method used by the City of New York modified to suit Indian conditions:[1]

Class inspection.

Make a rapid general survey of class from front of room for: Symptoms of illness, especially communicable disease. Clothing and hair. Note cleanliness and tidiness. Feet and shoes. Note condition.

Teeth. How many have cleaned their teeth to-day?

Individual inspection.

Hygiene inspection position.

Extend head backward and turn face to the light.

Draw down clothing around the neck with hand nearest the light.

Display teeth and gums.

When the students are in this position the teacher makes a closer inspection for symptoms of illness. He inspects for cleanliness of: (1) Hands and arms, (2) Finger nails, (3) Finger nail biting, (4) Teeth, (5) Face, neck and ears, (6) Head. He mentions any defects as they are discovered, using tact. At least once a week the class in the "Hygiene Position" files past the teacher, who stands near a window to observe the condition of the heads more closely.

One way to develop interest in cleanliness is the use of the cleanliness chart. When a student is dirty a red mark is placed after his name, and when clean no mark. The object is to see which students have clean records for the month and to see which class in the school has the best record. When competition between classes is held a prize which may be used from year to year should be placed in the class room having the best record for the preceding month.

A student's record of cleanliness should count toward his hygiene or physical activities grade.

Communicable Disease Control

As shown above, a teacher should know the common symptoms of communicable diseases for the protection of

[1] Board of Education, New York, *Daily Morning Inspection Directions.*

the students and himself. Any student with suspicious symptoms should be sent to his home or to the dispensary and if infected should not be permitted to enter school until he receives a doctor's certificate stating that he is completely cured. If communicable disease is not detected early, the entire school may become infected. The teacher should note the condition of the students during the daily morning inspection. The following chart should be studied by teachers:[1]

For Teachers.

Signs of Health Disorders and Physical Defects in School Children.

The following signs of disorder have been arranged in three groups for the use of teachers in detecting possible health and physical defects in children under their care.

Group I contains signs of disorder which call for immediate attention.

Group II names of abnormality pointing to more chronic disorders which should be remedied early.

Group III contains indications of disturbance which are important in connection with other signs of physical disorder.

Group I.

Signs.	
Sore throat	Disorders of nose, throat and ear.
Earache	
Ear discharge	
Running nose	
Sore eyes of any kind	Eye disorders and defects.
Styes	
Congested eyes (red or bloodshot) ...	
Dizziness	
Flushed face	Contagious diseases.
Chill	
Headache	
Eruptions	
Nausea	
Vomiting	
Running nose	
Congested eyes	
Cough	

[1] Wood, Thomas D., and Rowell, Hugh Grant. *Health Supervision and Medical Inspection of Schools,* pp. 104-106.

Signs.	
Fits	Nervous disorders.
Fainting	
Enlarged glands in neck	Nutritional and general disturbances.
Puffiness of face and eyes	
Shortness of breath	
Unusual pain anywhere	
Peculiar postures when reading ...	Eye disorders and defects.
Poor reading or spelling	
Prominent teeth	Teeth defects.
Poor articulation	
Broken teeth	
Malnutrition	
Irritability	Nervous disorders.
Bad temper	
Undue emotion of any sort ...	
Frequent requests to go out ...	
Timidity	
Stammering	
Cruelty	
Moroseness	
Solitary habits	
Undue embarrassment	
Undue activity	
Misbehaviour	
Deficient weight	Nutritional and general disturbances.
Pallor	
Lassitude	
Perverted tastes (food)	
Slow mentality	
Peculiar or faulty postures ...	
Under-development	
Excessive fat	
Low endurance	
Disinclination to play	
Fatigue	
Pigeon-toed gait	Defects of feet and legs and defective movements.
Shuffling, inelastic walk	
Exaggerated knee action in walking	
Shifting from foot to foot	
Standing on outer edge of feet ...	
Standing on inner side of feet, heels turned out	
Locking knees	
Leaning against wall or desk ...	
Shoes run over at either side ...	
Wearing out of soles asymmetrically	
Twitching of foot muscles ...	

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Group II.

Signs.	
Mouth breathing	Disorders of nose, throat, ear and organs of respiration.
Loud breathing	
Nasal voice	
Catarrh	
Frequent colds	
Offensive breath	
Chronic cough	
Deafness	
Twitching of lips	
Headache	
Headache	Eye disorders and defects.
Crossed eye	
Squinting	
Holding book too near face ...	
Decayed teeth	Teeth defects.
Discoloration of teeth	
Crooked teeth	
Offensive breath	
Inability to hold objects at will ...	Nervous disorders.
Spasmodic movements	
Twitching of eye, face or any part of body	
Nail biting	
Perverted tastes	
Sex disturbances	
Pains in feet	Defects of feet.
Toeing markedly out	
Flatfoot gait	
Swelling, puffiness of feet ...	
Excessive perspiration of feet ...	
Unequal height of shoulders ...	Incorrect posture.
Flat chest	
Round back and shoulders ...	
Stooping	

Group III.

Prominent upper teeth ...	Disorders of nose, throat and ear.
Blank expression	
Slow mentality	
Poor physical development ...	
Inattention	
Slow progress	

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CHAPTER III.

HEALTH INSTRUCTION AND THE DEVELOPMENT OF HEALTH HABITS.

HEALTH is the foundation of an efficient and happy existence, and whatever can be done to eliminate the causes of poor health should unquestionably be done. A healthy population is a nation's greatest asset. It is estimated that approximately seventeen millions (one and seven-tenths crores) of lives are lost each year due to preventable causes.[1] The loss of lives during the entire World War was approximately seven millions (seventy lakhs).[2] That the rate of deaths from preventable causes is high in India is shown by the fact that the average length of life is less than twenty-five years, which is about half as high as in Western countries. When these figures are considered in relation to financial loss due to loss of time and wages the figures are no less startling. It is estimated that the United States loses annually about three billions of dollars (nine hundred crores of rupees) due to preventable disease.[3] Stupendous sums are also estimated for European countries. The loss in India undoubtedly runs into staggering figures. In addition to the loss of human life and money are the immeasurable loss of family happiness and the untold suffering and interference with progress. Money spent in the work of health education pays larger dividends than that spent in any other field of human betterment.

There are two main causes of poor health. One is ignorance ; the other a failure to apply knowledge of health to every-day life. Health knowledge and the development of health habits necessarily go hand in hand. If knowledge of this type is not put into use, its value is practically nil. For that reason the main emphasis in educational institu-

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[1] Winslow and Williamson. *The Laws of Health and How to Teach Them*, p. 6.

[2] *Ibid.* [3] *Ibid.*

tions, so far as health education is concerned, should be on the development of health habits. Such a task cannot be accomplished in one class of hygiene or other health subject, but should be a part of the work of every teacher and incorporated in every subject as far as possible.

The aims of health education, according to the report of a committee headed by Dr. Thomas D. Wood, are as follows:[1]

> "1. To instruct children and youth so that they may conserve and improve their own health.
>
> "2. To establish in them health habits and principles of living which throughout their school life and in later years, will assure that abundant vigor and vitality which provide the basis for the greatest happiness and service in personal, family, and community life.
>
> "3. To influence parents and other adults, through the health education programme for children, to better habits and attitudes, so that the school may become an effective agency for the promotion of the social aspects of health education in the family and community as well as in the school itself.
>
> "4. To improve the individual and community life of the future; to insure a better second generation, and a still better third generation; a healthier and fitter nation and race."

These aims apply to every country and every race, although the accomplishment of them will vary in each country and section of a country according to their special needs.

Health Subjects.

Personal and group hygiene, physiology, mental hygiene, sex hygiene and first aid are the essential health subjects to be taught in schools. They should be combined into a health education course, and taught progressively from class to class, the subject-matter being suited to the mental and physiological age of the students. The chief problem in teaching such a course is in determining the material to be covered, that is, to instruct the school children during their school life in the essential facts necessary for their own health and well-being. This must be done before a suitable syllabus in health education can be drawn up. The following is a

[1] Joint Committee on Health Problems in Education (United States), headed by Thomas D. Wood. *Health Education,* p. 7.

suggested list of such health material, all of which every boy should know by the time of graduation from high school:

A. The relation of health to the individual, to the home and to society.
   1. Loss of human life due to preventable disease.
   2. Loss of money due to preventable causes.
   3. Effect of ignorance on happiness and human progress.
   4. Need for practical application of health knowledge.

B. Food.
   1. Food and growth. Best test of health in young is growth. Age-height-weight standards.
   2. The digestive system.
      (*a*) The mouth: teeth, salivary glands.
      (*b*) The pharynx.
      (*c*) The æsophagus.
      (*d*) The stomach: the small intestine; the pancreas and liver; the large intestine.
   3. Food—kinds and effects.
      (*a*) Definition of food.
      (*b*) Building and repair.
         (1) Protein or "body bricks".
            Function.
            Types—Incomplete: those which will sustain life, but not produce growth; those which will not sustain life.
            Complete: those which both sustain life and promote growth. (Milk the most perfect food for children.)
            Practically no provision in body for storage of protein. Danger of eating too much protein.
         (2) Mineral salts.
            Relation to bones and teeth and soft parts of body.
            Types—alkaline and acid.
            Where found.
      (*c*) Fuel foods.
         (1) Types—
            Starchy foods.
            Sugar.
            Fats and hydrocarbons.
         (2) Functions.
         (3) Quantities of each needed.
      (*d*) Regulating foods.
         (1) Function.
         (2) Types—mineral salts, water, ballast or bulk, hard foods, vitamins or protective substances.
         (3) Importance to health.

4. Beverages and food accessories.
   Kinds and effects.
   (1) Alcohol, toddy.
   (2) Coffee, tea.
   (3) Aerated drinks.
5. Hygiene of nutrition.
   (*a*) Wise choice of food. Well-balanced diet.
   (*b*) Food values and body needs.
   (*c*) Food digestibility.
   (d) Food poisons.
   (*e*) Correct eating habits: proper chewing, cleanliness, mental attitude.
   (*f*) Regular evacuation.
   (g) Proper preparation of food.
   (*h*) Buying best combinations of food with funds available.
6. Suggestions for teachers.
   (*a*) Monthly height and weight measurements.
   (*b*) Mid-day lunch at school.
   (*c*) Advice to undernourished students.
   (*d*) Parents' and teachers' get-togethers to consider problems.
   (*e*) Creation of a desire in the students to eat proper food in order to grow normally.
   (*f*) Posting of height and weight charts on bulletin boards.
   (*g*) Use of practical illustrations as much as possible.
   (*h*) Hygienic feeding in hostels.
   (*i*) Experimenting by planting seeds in different soils and noting effect on plants.

C. Personal cleanliness.

1. Relation to health.
2. The skin.
   (*a*) Functions.
   (*b*) Structure: sweet glands, sense organs, hair, oil glands.
   (*c*) Body temperature.
3. Cleanliness of skin.
   (*a*) Use of soap.
   (*b*) Washing the hands frequently: upon rising, before meals, upon retiring.
   Washing the face, neck, ears.
   Bathing.
   Brushing and washing the hair.
   Keeping the nails clean and cut short
4. Teeth.
   (*a*) Importance of clean teeth.
   (*b*) Relation of decayed teeth to general health.
   (*c*) Rules for brushing and cleaning.
5. Cleanliness of nose and mouth.
   (*a*) Never cough or sneeze at others.

(*b*) Keep hands away from nose and mouth. Danger to self and others.
(*c*) Keep pens and pencils away from mouth.
(*d*) Let teacher know if throat is sore.

6. Clothing.
(*a*) Comfort, cleanliness, neatness, suitability, care.
(*b*) Harmful effects of clothes worn tightly about the waist.

7. Feet and shoes.
(*a*) Effect of foot ailments on physical efficiency.
(*b*) Keep feet dry and clean. Danger of wet feet.
(*c*) Effects of poor-fitting shoes: corns, bunions, etc.

8. Suggestions for teachers.
(*a*) Inspect the students each morning for cleanliness. Make a rule that each student must come to school neat and clean.
(*b*) Use cleanliness charts.

D. Air and sunlight.

1. Relation to national vitality.
2. Description of respiratory system.
3. Contents of air.
4. Important features of ventilation: motion, coolness, humidity, freshness
5. Draughts. Relation to colds.
6. Chief sources of impurities in air.
7. Nature's agents for purifying air.
8. Danger of impure air.
9. Sleeping with the head uncovered at night. Importance.
10. Effect of exercise on the lungs.
11. The value of sunlight.
12. Tuberculosis.
Causes, predisposing factors, prevention, treatment.
13. The out-door life.
14. Correct way to breathe.
Mouth breathing and its effect on the teeth.
Relation of breathing to tonsils and adenoids.
15. Suggestions for teachers.
(*a*) Teach students how to breathe properly.
(*b*) Use practical experiments as much as possible.
Examples: Cover one plant and leave another uncovered and note what happens.
Leave one plant in a shady spot and another in the sunshine for several days and note results.

E. Evacuation.

1. Importance of regular evacuation
2. Harmful effects of evacuating on public roads or where people walk.
Spread of disease, hookworm, etc.

3. Suggestions for teachers.
   (*a*) Create a feeling of responsibility for public health.
   (*b*) Make it a rule that students must use latrines and urinals.

F. Insect pests and their relation to disease.
   1. Unhappiness, loss of time and money due to diseases spread by insects and vermin.
   2. Life history of insects and how they spread disease.
      (*a*) Mosquitoes and malaria.
      (*b*) Fleas and how they spread plague through rats.
      (*c*) Bed-bugs and how they spread leprosy, tuberculosis, skin diseases, etc.
      (*d*) Flies and how they spread cholera, dysentery, sore eyes, etc.
      (*e*) Lice, sandflies, ants, itch insects and ticks and how they spread disease.
   3. How to prevent the spread of diseases by insects.
      (*a*) Personal and home cleanliness.
      (*b*) Evacuation in suitable places.
      (*c*) Proper disposal of refuse and excrement.
         (1) Domestic refuse, stable litter, street litter.
         (2) Methods of disposing of refuse and litter:
            Putting in a pit.
            Destroying by fire.
            Selling.
         (3) Methods of disposing of excrement:
            The dry system.
            The wet system.
            Incineration.
            Biological treatment.
      (*d*) Cover food with netting and store it under cover.
      (*e*) Sleep under a net. Protect babies from insects.
      (*f*) Destroy insects. Use of insecticides.
      (*g*) Buy clean food and only from merchants with clean and insect-proof stands.
      (*h*) Campaign against insects.

G. Communicable diseases and their prevention.
   1. Unhappiness, suffering, loss of time and money due to communicable diseases.
   2. Relation to national vitality.
   3. Importance of precautionary measures.
   4. Meaning of word "communicable".
   5. Causes of illness.
      (*a*) Infection by germs.
      (*b*) Contagion.
      (*c*) Excessive exposure to the sun's rays.
      (*d*) Chill.
      (*e*) Indiscretion in eating and drinking.
      (*f*) Uncleanliness.

6. How germs spread.
   (*a*) Contact with infected person.
   (*b*) Contact with sputum and excreta from sick person.
   (*c*) By disease-carrying insects.
   (*d*) Taking food and drink containing germs.
   (*e*) Uncleanliness of person and surroundings.
7. Communicable diseases.
   (*a*) Cholera: causes, symptoms and precautions.
   (*b*) Dysentery: causes, symptoms and precautions.
   (*c*) Plague: causes, symptoms and precautions. Importance of inoculation.
   (*d*) Enteric or typhoid fever: causes, symptoms and precautions.
   (*e*) Tuberculosis: causes, symptoms and precautions. Importance of fresh air and sunshine.
   (*f*) Small-pox: causes, symptoms and precautions. Importance of vaccination.
8. Suggestions for teachers.
   (*a*) See that all students are vaccinated.
   (*b*) Urge inoculation when necessary.
   (*c*) Stress personal cleanliness and cleanliness in hostels.
   (*d*) Make the school surroundings a good example to the students.

H. Water.

1. Importance to life.
2. Why impure water spreads disease quickly.
3. Danger of relying on the appearance of water.
4. Sources.
   (*a*) Upland surface water.
   (*b*) Rain water.
   (*c*) Ordinary surface water.
   (*d*) River water.
   (*e*) Wells and springs.
5. Wholesome water: springs and deep wells.
6. Suspicious water: Upland surface water, stored rain water.
7. Dangerous water: ordinary surface water, river water, shallow well water.
8. How water is polluted.
   (*a*) At its source: bathing, washing clothes, refuse.
   (*b*) During storage: exposure, unclean containers.
   (*c*) During transit.
9. How wells are polluted.
   (*a*) Excreta and filth seeping into well through the ground.
   (*b*) Impure water dripping back into well from bathing, washing of clothing or cooking utensils, etc.
   (*c*) Lack of protection on top of well, allowing dust, flies, etc., to enter.
10. Protection of wells.
   (*a*) Proper construction.

(*b*) Care of surroundings. No excreta or rubbish should be allowed in the vicinity of wells.
(*c*) Sanitary buckets.

11. Methods of purifying water: boiling, distillation, filtration, precipitation, use of germicides.
12. Sanitary drinking cups.

I. Exercise.

1. Relation to national vitality.
2. Relation to health.
   (*a*) Physical, mental and moral effects. Sportsmanship.
   (*b*) Injurious effects and sedentary life on heart, lungs, muscles and mind.
3. Brief description of muscles and bones. Muscles one-half body weight.
4. Value of varied activities: games, sports, athletics, gymnastics, drill, walking, swimming, camping.
5. Suitability of exercise.
   (*a*) In relation to climate.
   (*b*) In relation to age.
   (*c*) In relation to occupation.
6. Importance of an activity hobby. Manual training, gardening, games, etc.

J. Posture.

1. Explain and demonstrate good sitting and standing postures.
2. The value of good posture.
3. The effects of poor posture.
4. Types of poor posture.
5. Causes of poor posture.
   (*a*) Muscular weakness and deformity.
   (*b*) Ignorance of correct posture, and carelessness.
   (*c*) Malnutrition and poor health.
   (*d*) Lack of proper exercise.
   (*e*) Wrong types of exercise.
6. Suggestions for teachers.
   (*a*) Emphasize good posture during classes.
   (*b*) Give posture tests. (See Chapter V.)

K. Eyes.

1. Demands on the eye in this modern age.
2. Brief description of the eye.
3. Preventable causes of poor eyes:
   (*a*) Bad glares.
      From white walls.
      From strong sunlight.
   (*b*) Facing light day after day for long periods of time.
   (*c*) Continual reading of wrong types of print.
   (*d*) Continual reading and writing with the work too close to the eyes.

(*e*) Continual reading at night with a poor light.
(*f*) Rubbing eyes with dirty hands.
(*g*) Wiping eyes with dirty cloths or towels.
(*h*) Infection from house flies or ophthalmic flies.

4. Preventatives:
(*a*) Proper reading and writing positions.
(*b*) Have the best light come from the left.
(*c*) Eliminate glares.
(*d*) Shade windows when the sun is shining through on the desks.
(*e*) Read books with suitable print.
(*f*) Personal cleanliness.

5. Symptoms of eye trouble.
6. Importance of wearing glasses when necessary.
7. Effects of eye strain on school work.
8. Suggestions for teachers.
(*a*) Test the eyes of all the children at the beginning of the school year and let those students with poor eyes sit in the front seats.
(*b*) See that the room is properly lighted and the students properly seated.
(*c*) Keep blackboards clean.

L. Hearing.

1. Importance of normal hearing to mental development.
2. Brief description of the ear.
3. Cleanliness of ear.
4. Suggestions for teachers.
(*a*) Give a hearing test at the beginning of the school year (see Chapter XI) and have students with poor hearing sit near the front of the room.

M. Sleep.

1. Relation of sleep and rest to nerves and other parts of the body.
2. Amount needed.
3. Importance of regular sleeping habits. "Early to bed, early to rise . . . ."
4. Importance of good ventilation. Danger of covering head.

N. Mental hygiene.

1. Relation of the mind to the body.
2. Value of a healthy, normal mind.
3 What constitutes a healthy mind:
(*a*) A healthy feeling tone.
How do you ordinarily feel? Depressed or cheerful? Optimistic or pessimistic? Well or unhealthy?
(*b*) Energetic and well-regulated will.
Do you get things done or do you procrastinate? Do you accept responsibility or do you shirk? Have you healthy impulses or are you lazy?

(*c*) Well-regulated instincts or habits: nutrition, sex, fear, self-consciousness.

Is your appetite normal or are you fussy about your food? Are you abnormally interested in sex? Have you the right attitude toward sex?

Are you afraid of the dark? Do you lack courage? Are you afraid of the future? Are you foolhardy? Are you rash?

Are you self-conscious and embarrassed in the presence of others?

(*d*) Efficient intelligence.

Do you see things as they are, or are you blinded by prejudice? Do you seek truth and accuracy or do you allow yourself to be deceived? Have you a healthy philosophy of life?

4. Causes of mental depression and worry.
   (*a*) Physical: disease, bad teeth, constipation, flabby muscles, hidden ailments, insufficient sleep, insufficient activity, poor diet.
   (*b*) Mental: complex environment, abnormal expectations, wrong attitude toward situations in life.
5. Effect of climate on mind.
6. Necessity for an aim in life.
7. Ideals of service.
   (*a*) Value of voluntary service to the individual himself.
   (*b*) Value of voluntary service to the nation.

O. Sex hygiene.[1]

AGES 5 TO 8.

Nature study.

1. First series:
   (*a*) Plants.

   Germinating seeds and growing plants. Origin and use of seeds to the plant world and to man.

   (*b*) Animals.

   Animal families—birds, pets.

   Mating and home life of birds.

   Care of young birds.
2. Second series:
   (*a*) Plants.

   Life activities.

   Comparison of plants with animals.

   Conditions for proper growth and development of plants compared with animals.

   (*b*) Animals.

   Continuation of study of animal families.

[1] I am indebted to the State of Ohio Department of Education Syllabus, *Physical Education and Hygiene*, for many of the ideas under this heading pp. 122-125.

3. Third series:
   (*a*) Plants.

   Study of seedlings and comparison of their parts with those of seeds soaked in water for about 24 hours.

   Function and behaviour of each part of seed during germination.

   Seed dispersal. Bring typical kinds to class. Usefulness of such provisions.

   (*b*) Animals.

   Continuation of study of animal families.

AGES 9 TO 11.

Nature study.

1. First series:
   (*a*) Plants.

   How baby plants got into the seed.
   Parts of flowers and their functions.

   (*b*) Animals.

   Origin and early development of a few typical animals, such as: frog, chick, rabbit, bird, fish.

2. Second series:
   (*a*) Plants.

   Description of pollination and fertilization, using such terms as "father" part for the sperm cell of the pollen grain and "mother" part for egg cell.

   (*b*) Animals.

   Relative length of gestation period in a few mammals, including human beings.
   Care of young.
   Observation of animal families.

AGES 12 TO 14.

1. First series:
   (*a*) *Biology and general science.*
   (1) Plants.
   Continuation of the study of reproduction.
   Cross pollination and how effected.
   Work of some great naturalist (very brief).
   Elementary principles relating to plant breeding.
   (2) Animals.
   Principles relating to animal breeding.

   (*b*) *Physical education and hygiene.*
   (1) For boys:
   Importance of internal secretions.
   Male reproductive organs.
   Attitude toward members of opposite sex.
   Truth about improper habits.
   (2) For girls:
   Corresponding material.

2. Second series:
   (*a*) *Biology and general science.*
      (1) Plants.
         Elementary eugenics.
         Meaning of terms: heredity, variation, hybridization, control of environment.
      (2) Animals.
         Review of reproduction of typical animal forms with additional explanations.
   (*b*) *Physical education and hygiene.*
      (1) For boys:
         Significant changes at puberty.
         Elementary facts about venereal disease.
      (2) For girls:
         Significant changes at puberty.
         Explanation of menstruation.
         Elementary human embryology.
         Optional: most significant fact about venereal disease.

AGES 15 TO 18.

1. *Biology, general science, nature study.*
   (*a*) Reproduction in typical animals and plants from all the larger groups.
   (*b*) Significance of sex, including study of secondary characteristics.
   (*c*) Plant and animal breeding.
   (*d*) Mendel's Law.
   (*e*) Relation of sex to national problems.
   (*f*) Elementary embryology.
2. *Sociology and economics.*
   (*a*) Eugenics.
   (*b*) Relation of sex to national problems.
   (*c*) History of the family. The Kallikak and Edwards families.
   (*d*) Contribution of sex toward higher things of life.
   (*e*) Prostitution and venereal disease.
   (*f*) Double standard *versus* single standard of morality.
   (*g*) Morons and feeble-minded.
   (*h*) Housing problems.
   (*i*) Amusements and recreation.
3. *Physiology and hygiene.*
   (*a*) For Boys:
      Functions and activities of the human male reproductive organs.
      Seminal emissions.
      Quacks.
      Continence and health.

As much of an understanding of women's sex nature as will contribute to an intelligent and wholesome attitude toward girls and women.

(*b*) For girls:

Corresponding facts.

4. *English.*

(*a*) Create taste for good literature.

(*b*) Show harm of vulgar literature found in many books and magazines.

(*c*) In the study of literature, consider sex in relation to high ideals.

(*d*) Essays concerning high ideals.

P. Emergency sex teaching.[1]

For boys in Classes VIII, IX, X and XI, to be given in from three to six lectures. It is to be understood that this type of sex teaching is to be used as emergency teaching only. It is far more desirable to introduce a progressive course as above.

1. Every living thing is born of a parent.

None come into the world of themselves.
Fruit from tree or plant.
Birds, fishes, insects, animals.
Human beings from egg.

2. Four ways of reproduction:

(*a*) Division of one cell. The mother disappears.

(*b*) Budding and separating. Potatoes, ginger, etc.

(*c*) Plants: male and female in one.

Others where sexes are found in separate plants.

(*d*) Higher orders where male and female are quite separate. Fishes, birds, animals.

(1) Plants propagate from seeds; higher orders from eggs.

(2) Two methods in higher orders:

Development of egg after separation from mother.

In fishes the eggs are fertilized after separation from mother.

In birds the eggs are fertilized before leaving the mother. If this is not done the eggs will have no life in them.

Development of egg inside the mother until young are ready to be born.

Human beings and most animals.

Eggs protected and cared for inside mother.

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[1] This outline was prepared from a series of lectures given by the Rev. W. E. Gordon in Jubbulpore, India, and is used with his permission.

3. Important function of male.
The giver of life.
In that respect he is like the Creator Himself.
Sad that this matter is talked of in vulgar language, in impure stories and in songs.

4. The sex organs, a workshop where strength, energy, manhood and life are manufactured.
(*a*) Function of glands of the body.
(1) External secretions: saliva, bile, gastric juice, etc.
(2) Internal secretions:
Thyroid gland: aids growth. A weak thyroid gland will result in a dwarfed, idiotic, weak and helpless individual. Example: a mentally deficient boy restored with the thyroid of an executed man.
Liver: for both external and internal secretions.
(*b*) Show picture of male sex organs.
(1) Testicles are glands which have both external and internal secretions.
(*a*) Spermatozoa or male sex cell.
Lies dormant until excited.
In picture of sex organs describe purpose of Cowper's gland, prostate gland, etc., and of semen.
(*b*) The internal secretions from testicles go into blood stream and aid growth of boy into manhood.
Explain difference between stallion and gelding, bull and ox, man and eunuch: result of removal of testicles.
Self-abuse does the very same thing in that it deprives the boy of life-giving qualities. Difference: hope for the eunuch gone forever, but hope for the boy if he quits.
(*c*) Difference in small boy, youth and man due to the fact that the workshop begins after the age of twelve.
(1) Effect of sex development:
In animals: horns, teeth, mane, deep voice.
In birds: fine plumage.
In boys: deep voice, hair on face, hardening of muscles, general development of organs of the body. Not fully mature until age 25.
(2) Warn against those who say that it is necessary to get rid of semen occasionally.
Night emissions natural.
How to prevent an excess of night emissions.
Man is wonderfully made. His temple or body is indeed holy. Heavy punishment to those who dishonour that temple. A rich reward to those who treat it with reverence.
Lift this subject from the mire into which bad men have dragged it.

(3) Advice to those who have acquired bad habits.
Quit. Practise self-control.
Keep thoughts pure. Think good things.
Memorize inspiring passages of poems.
Avoid bad company.
Shun bad songs, the nautch, books and stories.
Take hope ; have courage.

5. The female organs.
(*a*) We discussed the factories for the creation of life in the male. We shall now talk of these factories in the female.
(*b*) Two factories called ovaries (show drawings of ovaries and uterus).
(1) They produce:
Internal secretions that give strength, red blood and attractive womanly qualities.
Eggs. You have thought of birds as coming from eggs. How wonderful that you were born from an egg!
(2) One egg developed in the ovary at a time usually.
Covering bursts, egg (so tiny—invisible to the naked eye) comes down the tubes.
This takes about two weeks. Hair-like projections push it along. Comes down into the uterus every 28 days. Women suffer much pain when this happens. They need the sympathy of men. We make them do hard work at this time, which is wrong.
There is no life in this egg. If spermatozoon should enter womb, it instinctively knows that the egg is for it ; it enters and gives life.
(*c*) What happens when egg becomes fertilized:
Egg fastens itself to the side of the uterus and gradually increases until the birth of the child, after nine months.
The wonder of it all is that you and I came from that tiny spermatozoon and egg which have combined.
Woman's function a most sacred one.
Motherhood the greatest sacrifice.
Sometimes gives her life for her young.
Gives her life attending to young.
(*d*) Women's place in the development of the race.
Healthy, happy womanhood most important.
Should be treated with respect.

6. Venereal diseases.
(*a*) Relation to the health of the race.
(*b*) Types of venereal disease.
(1) Chancroid.

(2) Gonorrhoea. How transmitted.
How it spreads in the body: penis, bladder, kidneys, testicles.
Not cured when it appears so externally.
Quack doctors cannot cure this disease.
Responsible for much blindness, etc., in babies.
May remain dormant in the body for years.
Not always woman's fault when she cannot bear children. More often the fault of the male.

(3) Syphilis. How transmitted.
Most deadly disease.
Enters the blood.
Affects the vital organs, especially the brain and spinal cord.

7. Man is responsible for most of the unhappiness in the world because of ignorance and selfishness.
Need for a rational attitude toward sex.
A patriotic duty to keep the race clean and to give woman the respect and regard which are her due.

Q. First aid.

1. The human body—brief description.
2. Accidents and preventable diseases.
Causes:
Poor physical condition. Lack of physical skills.
Putting pins, etc., in the mouth.
Putting foreign bodies in the ear or nose.
Playing with matches or near a fire.
Careless handling of knives and other sharp instruments.
Evacuation in public places.
Contact with sick persons.
Too much medicine.
Neglect of cuts and wounds.
Eating and drinking questionable substances.
Playing in dangerous places.
Flies, mosquitoes, rats, filth.
3. First aid.
(*a*) Definition of term.
(*b*) First aid material.
(*c*) General directions for rendering first aid.
(1) Injuries in which the skin is not pierced: bruises, strains, sprains, dislocations, fractures.
(2) Injuries in which the skin is pierced or broken: wounds and hæmorrhages, nose-bleed, abdominal wounds, wounds in which foreign bodies remain.
(3) Injuries from heat, cold, electricity, burns, scalds.
(4) Unconsciousness, partial or complete:
Shock, electric shock, fainting, hæmorrhage, alcoholism.

Apoplexy and brain injuries, sunstroke, heat prostration, exhaustion, suffocation, drowning. Schafer's method of artificial respiration.

(5) Poisoning.

Sources: herbs, shrubs, toadstools, drugs, stings of insects, snake bites.

Kinds: acids, alkalies, narcotics.

Treatment.

(*d*) Carrying the injured: fractures and sprains, hæmorrhages, sunstroke, heat prostration, poisons, exhaustion.

(*e*) Common emergencies: cramp or colic, chill from exposure, nervous shock, croup, neuralgia of face, toothache, earache, styes, grit in eye.

(*f*) Bandaging.

(*g*) Pressure points; use of tourniquet.

R. Public health organizations.

1. Names and functions.
2. How they may be used.

S. Drugs, quacks, and money-making schemes.

1. The relation to national health.
2. Use of modern medical man's knowledge.
3. Superstition.
4. Common harmful practices.

T. Excretion.

1. How the body wastes are disposed of.

(*a*) Lungs.

(*b*) Skin.

The skin as an index to health.

Care of the skin.

(*c*) Intestines.

Importance of regular and efficient evacuation.

Causes of constipation: poor posture, lack of tone, chronic appendicitis, lack of exercise, lack of sufficient water, unhygienic food, irregular habits of evacuation.

Normal Schools.

The teaching of health subjects in normal schools should be considered from two angles: first, the information required by the students themselves for their own personal benefit; second, the information required by them as teachers of health subjects. In addition to the above outline of material, the following should be used:

A. School hygiene.

1. Healthful schools and the student's health.
2. The school-room.
   (*a*) Windows and light.
   (*b*) Colour of walls.
   (*c*) Sun shades.
   (*d*) Cleanliness.
   (*e*) Freedom from dampness.
3. School equipment.
   (*a*) Desks and seats.
      (1) Effects of poor seating.
      (2) The seat:
         Shape, slant, support for the back, proper height (feet flat on the floor).
      (3) The desk:
         Relation to seat, desk top slant, movable top, proper height.
   (*b*) Blackboards.
      (1) Kinds:
         Strong black paper (for temporary work).
         Slate blackboards (commonly in use).
         Plaster-covered brick or wood with painted surface. Tendency to blister and peel.
         Painted sheets of heavy glass (very expensive).
      (2) Importance of keeping clean.
      (3) Location.
      (4) Proper height from the floor for each grade.
   (*c*) Blackboard erasers. Importance of frequent cleaning.
   (*d*) Toilets.
      (1) Location and ventilation.
      (2) Equipment per 50 students.
      (3) Urinals and latrines.
      (4) Cleanliness.
      (5) Rules.
   (*e*) Drinking water facilities.
      (1) Care of springs and wells.
      (2) Covered gamlas, dipper, individual drinking cups.
   (*f*) First aid kit.
      (1) Necessity for every school.
      (2) Educational value.
      (3) Contents.
4. Hostels.
   (*a*) Light for study.
   (*b*) Ventilation.
   (*c*) Cleanliness.
   (*d*) Age segregation.
   (*e*) Supervision.
5. School grounds.
   (*a*) Cleanliness. Not to be used for evacuation.

(*b*) Attractiveness.
(*c*) Playing fields.
(1) Freedom from stones and obstacles.
(2) Cleanliness and freedom from dust.
(3) Shade.
(4) How to mark fields.

6. The teacher's health.
(*a*) Importance for efficient teaching.
(*b*) Importance of a good example.
7. Mid-day lunch. Necessity.
8. Posture of the school child.
(*a*) Need for constant attention.
(*b*) How to teach good posture.
9. Developing health habits in school children.
(*a*) The duty of the school.
(*b*) Daily inspection.
(1) Personal cleanliness: face, hands, feet, nails, teeth, hair, clothing.
(2) Attention to cuts, etc.
(3) Immediate treatment of illness.
(4) Use of cleanliness charts.
10. Physical and medical examinations. Importance.

B. Exercise.

1. Types of exercise:
Organic.
Corrective.
Skills.
2. Muscular activity at the different stages of development.
3. Sex and exercise.
4. Exercise for the school boy.
(*a*) Need for counteracting the inactivity of the school-room.
(*b*) The need for exercise and recreation out-of-doors.
(*c*) Activities for primary schools:
(1) Age of imitation and individuality.
(2) Typical programme for a 40-minute period.
(3) Activities: story plays, imitative activities, singing games and other games, imitative and elementary calisthenics and marching.
(*d*) Activities for middle schools:
(1) Need for sufficient exercise to produce deep breathing.
(2) Physiological needs.
(3) The instructional period.
Typical programme:
8 minutes for marching and speed exercises (warming up exercises).

12 minutes for calisthenics: free hand, wand, Indian clubs, dumbbells, lathi, lazium, order movements; arm and leg exercises; trunk exercises; posture training.

20 minutes for games, self-testing activities or athletics.

Keep the boys active. Arrange a competitive programme.

(4) The games period.

Importance of developing physical skills and a play hobby.

Games space available and its efficient use.

Types of games: small space and large space.

Tournaments.

Seasonal activities.

Athletics.

Age-height-weight divisions for competition.

Sportsmanship.

(5) The relief drill period.

Purpose.

Exercises to be used.

5. Exercise for the teacher.
   (*a*) The teacher as an example to the students.
   (*b*) Need for a play hobby.
   (*c*) Supervision of games:
      (1) Importance of enforcing rules.
      (2) Participation by the teacher.
      (3) Officiating.
      (4) Make physical activities as important as any other subject.
6. Examinations in physical activities.

C. Eyes and ears.
   1. The importance of a pleasant, distinct voice in a teacher.
   2. How to test eyes and ears.
   3. Indications of eye and ear defects.
   4. Arrangement in the classroom of children with defective ears or eyes.

D. Sex hygiene.
   1. Universal need for sex knowledge.
   2. Results of ignorance.
   3. Physical activity and sex.
   4. Literature and sex.
   5. Environment and sex.
   6. Effects of excessive sexual activity.
   7. Improper habits and their effects.
   8. Venereal diseases: types, causes, effects.
   9. Importance of wholesome attitude toward women.
      (*a*) Woman's place in the development of the race.
      (*b*) Women and children.

10. Control of thoughts.
11. Drugs, quacks, and money-making schemes.
12. Descriptions of reproductive system.
13. Glands and their functions.
14. Methods of teaching:
    (*a*) Primary schools.
        Through nature study.
    (*b*) Middle schools.
        Through nature study, hygiene, physical education, English, etc.
    (*c*) Stress sex ethics and moral standards.
    (*d*) Subject should be presented through subject-matter of other courses. No special sex education course.
    (*e*) Abnormality and immorality should not be stressed.
    (*f*) Present subject in a natural way.

The entire course in health education in normal schools should be taught with special reference to the material which will be taught by the students in primary and vernacular middle schools.

Relation of Health Education Subjects to other Subjects.

In addition to providing time in the school curriculum for health education as such, it is highly desirable that such teaching be interwoven with other subjects whenever possible. Health is related to all phases of life, and health material should be so taught that the child may realize this and not think of health education as simply a subject. This can be accompolished without interfering with the subject-matter in each subject and without checking normal progress by simply applying those parts of every subject which are related or can be related to health education. Following are suggestions as to how this can be done:

Nature Study.

This is an ideal subject for imparting health knowledge, for the basic facts regarding the plant and animal world may be used as a foundation in sex education. The germination and development of seeds and the origin and development of fish, frogs, chickens, birds, etc., should be taught with the idea of providing a normal, clean background for later studies in sex education. The need of air, food, water, sunshine, etc., by plants and animals should be

compared with the need of these things by humans. Likewise, all aspects of the plant and animal worlds which can be used to illustrate health laws and human needs and relationships should be taught from this point of view.

History.

History provides a good opportunity for imparting facts about health. The health and living conditions of ancient and modern peoples may be compared and conclusions drawn. For instance, ancient and modern sanitation systems may be compared ; germ theories and modern preventative methods may be discussed briefly where records of great plagues and their effect on civilization appear in the history material ; the relation of misuse of leisure time to race decadence may be shown and the importance of games and sports emphasized. The relation of the diets of different peoples to their national vigor may be brought out.

Science.

When studying air in chemistry, the students should be reminded of the relation of impure air to respiratory diseases and general debility. Hydrogen, nitrogen, oxygen, carbon, common salts, sulphur, etc., should be considered briefly in relation to food and body needs. The study of alkalies and acids may be linked up with first aid.

In physics the study of temperature may include body temperature, fever, chills, etc., and the clinical thermometer may be included among the other types studied.

English and the Vernaculars.

There are in print many interesting health stories which might be used as part of the reading course. Subjects for essays and compositions may include some related to health. Vocabulary study may include such words as sanitation, germination, infection, convalescence, disinfectant, ventilation, posture, communicable pest.

Mathematics.

Problems such as determining the best combinations of food obtainable for a stated amount, figuring the percent-

ages of the different elements in various kinds of foods, or figuring the cost of constructing an ideal well, may be used.

Geography.

The effect of physical features, vegetation, climate, etc., on man's health may be discussed. In studying water supplies the relative merits of various types for drinking purposes may be taught.

Biological Sciences.

The study of reproduction of the higher plants and animals affords an excellent grounding for the study of human reproduction. Secondary sex characteristics, Mendel's law of heredity, embryology, etc., may be included. Food, air, sleep, disease, exercise, etc., can be associated with this subject.

Manual Training.

In this course students might learn to make poles for mosquito nets, model wells, fly traps, etc.

Civics.

The relation of public health and sanitation to the development of the state should be shown and the value of public health organisations emphasized. Students should be taught that vaccination is a civic duty. The effects of liquor and habit-forming drugs on the human body should be stated, as well as showing how their use may prevent a man from being an ideal citizen.

Drawing.

Making health posters not only provides training in drawing, but impresses health facts upon the students' minds. Subjects might include mosquitoes, rats, flies, certain types of bacteria, a model well, foods, etc. The various systems of the body might also be drawn and sketches of good posture made.

The Development of Health Habits.

As already stated, the formation of health habits in school children is by far the most important work of health educa-

tion. Health teaching is not successful unless practical use is made of it. To accomplish this is no easy task, because children other than hostel students spend so much time away from school, but much can be achieved during school hours. The following will merely indicate the possibilities of this form of teaching. It must be emphasized here that this is not the work of one teacher, but of every teacher on the school staff.

What aspects of health can be influenced or controlled by the school staff? The first, obviously, is personal cleanliness. (See page 46).

The second is exercise. A progressive scheme of physical activities, introduced on modern, scientific lines, should be compulsory in every school. The liking which most boys have for games and natural activities should be fostered by making physical activities as interesting as possible. Walking, camping, swimming and games and activities which will be useful in after-school life should be encouraged. Schools should have facilities for after-exercise bathing, and boys should be taught the advisability of bathing after exercise to avoid a chill as well as for the sake of cleanliness.

Third, habits of hygienic feeding. It is very difficult to instil proper feeding habits in students who do not live in hostels, but with hostel students much can be done as the school authorities have control of the messing arrangements. Not only should food be chosen according to modern dietary knowledge (see suggestions in Chapter II), but cultured eating habits should be encouraged. Boys should be taught to drink plenty of water and discouraged from eating sweets between meals. All students should understand the importance of diet to health and mental efficiency. The weighing and measuring of students offers a great opportunity for influencing them regarding weight and normal growth. Underweight boys, especially, should be given advice regarding diet and all boys should be encouraged to maintain normal weight by hygienic living. Parents and teachers should get together at times to discuss this matter.

Fourth, habits related to air. First of all, boys should be taught to breathe through their noses. Mouth breathing is quite common amongst school children and often results in bad teeth and respiratory ailments. The need for fresh air

at all times, and especially while sleeping, should be stressed. Covering the head at night should be discouraged. Hostel students especially can be taught to put these things into actual practice.

Fifth, first aid habits. Students should be influenced to give immediate attention to cuts and bruises, as procrastination in this regard often results in serious infection. A well-equipped first aid kit should be the property of every school and it should be a school practice to take every precaution against infection.

Sixth, boys should form the habit of using latrines and urinals instead of the school compound. The school authorities should see that this rule is enforced, for not only is it inconsiderate to use places where people walk or where games are played for relief, but diseases such as hookworm are spread in this way.

Seventh, vaccination and inoculation. The school staff should see that all students are vaccinated. At times of plague and cholera epidemics inoculation should be encouraged when such precaution is advisable. Students should know the importance of preventative measures and should make it a practice to co-operate with the public health authorities when special measures to check disease are desirable.

Eighth, class-room habits. There are many desirable class-room habits which the teacher should endeavour to instil in the students. Class-room posture should be given special attention, as a child's attendance at school should not result in poor posture habits. When reading the student should be taught to hold the book at a proper distance from the eyes, because poor reading habits eventually lead to eye abnormalities. The proper writing position should also be emphasized. Other things to consider are: keeping pencils and pens out of the mouth, proper cleaning of erasers, the use of handkerchief when coughing or sneezing, avoidance of sitting in direct sunlight. Students should be allowed to leave class to go to the toilet when really necessary.

Ninth, realization of individual responsibility for community health. As disease spreads because of individual ignorance or neglect it is necessary that school children be trained to realize their responsibility to their fellowmen.

Special Methods of Teaching Health.

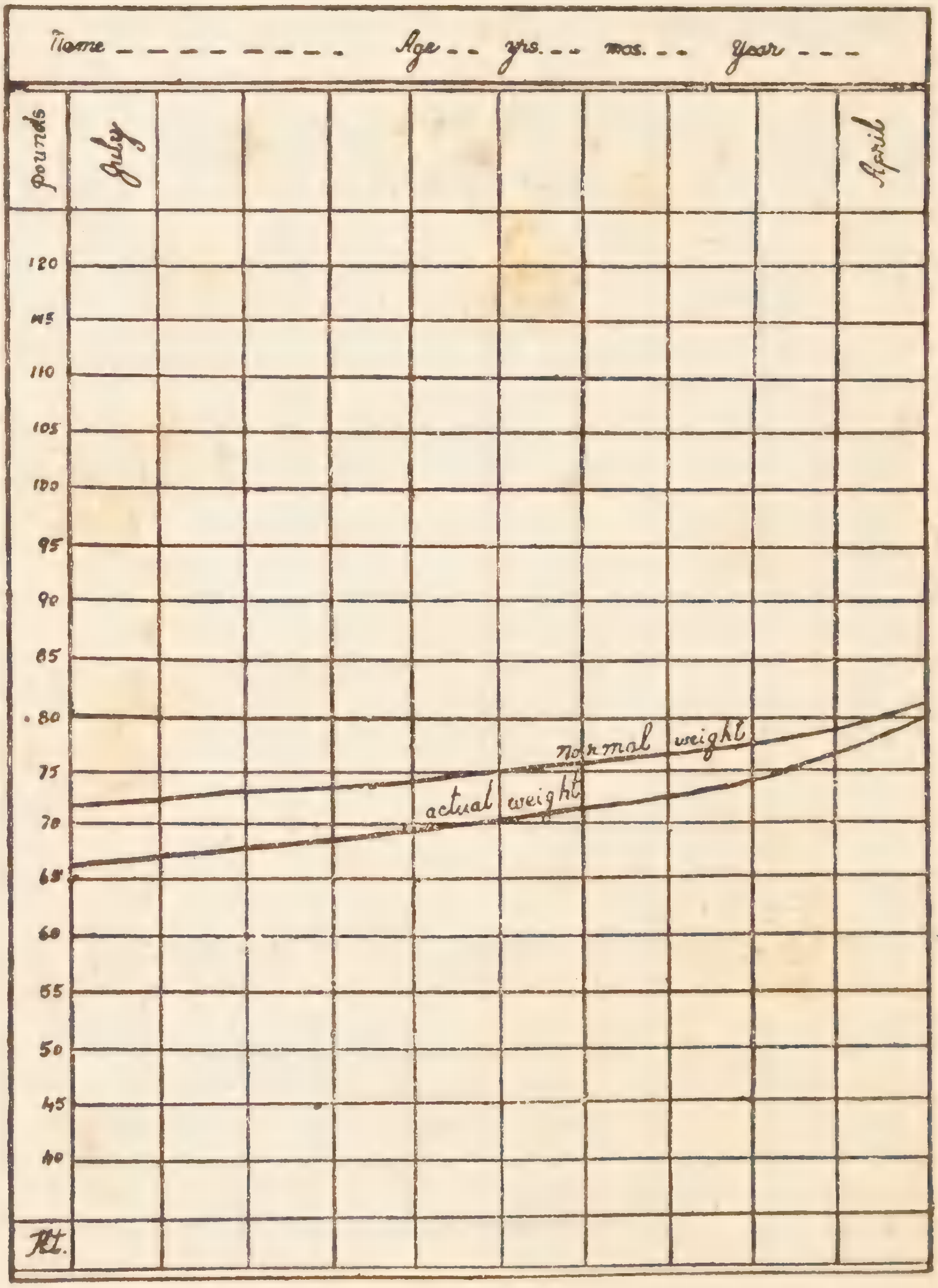
A good deal of health instruction can be imparted by special methods, as follows:

1. *Health posters.*

Posters from such organizations as the St. John's Ambulance Association should be used in every school. Students should also make posters themselves, using clippings from magazines and by drawing pictures. Posters about plague, malaria, enteric, small-pox, tuberculosis, food, sleep, exercise, etc., can be made. Posters should tell a health story or give simple information so that they can be readily understood. Each poster should depict one idea only, for a too complicated poster is confusing and does not have the value of a simple one. Appropriate headings may include the following:—

✓Guard Your Health.
✓Contagious Disease, Keep Out!
✓Prevention Is Worth More Than Cure.
✓Fresh Air Night and Day Keeps the Medicine Bottle Away.
✓Diet Cures More Than Medicine.
✓Spare the Brush and Spoil the Teeth.
No Play Makes Rama a Sick Boy.
✓Sleep Is Better Than Medicine.
✓Dirt Invites Disease.
✓Health Comes No Better Way Than Regular Exercise Each Day.
✓Don't be Afraid to Bathe, You Won't Shrink.
Invest in Yourself, Vegetables Will Always Bring a Good Rate of Interest.
The Unhealthy Bird Catches the Germ.
Let Your Book of Health Contain Vegetable Leaves.
Drink Milk and Grow Strong.
How Does Your Weight Compare With Last Year's?
✓Is Your Body Sagging?
Why Not Give Your Body At Least Half the Attention It Deserves?
✓The Mosquito Is Your Enemy.
Is the Plague Rat a Member of Your Family?
✓Dirty Water and Enteric Are Friends.
A Dirty Mind Is a Menace.
✓Make Your Body Your Servant, Not Your Enemy.
The Wise Man Uses the Dispensary.
A Dirty Well Spreads Disease.
✓Poor Diet Is the Root of Many Evils.
✓Vaccination Brings Satisfaction and Protection.

2. Let each student keep a monthly record of his own height and weight for the year on a form similar to the following:[1]



The chart is filled in once a month when the boy is measured and weighed. He puts a dot on the line of the month for his normal weight and one for his actual weight, filling

[1] Adapted from chart used by Bureau of Nutrition and Health Education, University of Texas, U.S.A. *Health and Happiness—Fifth Grade*, p. 12.

in his height at the bottom in the space provided. From month to month these dots are connected by lines to form a graph which shows the relation of his actual weight to the norm.

3. Have each student keep a record of the food he has eaten in a day in ounces and have him figure the protein, fat, carbohydrate, caloric and vitamin content according to standard tables. Is the diet well-balanced? How should it be changed if it isn't? (See *Food*, by Lieut.-Col. Robert McCarrison. Macmillan & Co., Ltd., Calcutta).

4. Seeds and plants are of great value to illustrate health rules. Gamlas or a wooden flower box should be available, so that the growth of plants may be observed within or near the class-room. Plant seeds or young plants and observe their growth from day to day. Let one boy act as gardener each day. Discuss what it takes to make a plant grow. Plants, like people, must have sunshine, plenty of water, plenty of fresh air and proper food.

Cover one plant and leave another uncovered. What happens? Why is air so important? and sunshine?

Plant one young plant in poor soil and another in rich soil. Why does the one in poor soil develop so slowly? Why should boys eat the right kinds of food? What foods are needed by man?

Water one plant daily and neglect another. What is observed? Why should man drink plenty of water?

5. Let each student keep a health book. These can be made of medium-weight paper about 12″ by 18″, folded in the middle and tied together with a cord. At the top of each page write or paste in a health rule, such as "I must keep clean," "I must have fresh air day and night," "I must eat food that makes me grow normally and that makes me strong," "I must exercise each day," "I must drink plenty of water," "I must be vaccinated," etc. On the rest of each page pictures from papers and magazines may be pasted or pictures may be drawn. These may represent vegetables, a well, sleep, games, etc.

6. Let one pupil demonstrate before the class a good sitting posture. Have all the students assume a good sitting posture. Why is it important to sit straight?

7. Have one student wet his bare feet and walk about

twelve paces so that his footmarks are left on the floor. Why should we walk with our toes pointed straight ahead? What is the danger of walking with the toes turned out?

8. Have the students run in place about fifteen times. What makes one breathe faster after exercise? Why is it necessary to exercise?

9. Have the class breathe in through their noses and out through their noses. Ask if any one has difficulty in breathing through the mouth?

10. During a period of two weeks have the students attempt to improve the condition of their finger and toe nails. Inspect them each morning and see that they are clean and well-kept.

11. The Health Ladder.[1] "Take a piece of cardboard 24″ wide by 30″ long. Rule lines crosswise one-fourth inch apart to represent rungs. Each space represents one-fourth pound. Rule the pound lines heavier than the others. With thumb tacks or pins fasten small paper dolls about one inch high so that their feet are on the bottom line. Each doll has a child's name written upon it. As a child gains in weight his doll is moved up, its feet being placed on the proper line.

"The idea is not to see who will gain fastest, or who will get to the top first, as this would be unfair and discouraging to the children who cannot gain rapidly because of home conditions or other factors quite outside their control. Instead make it clear that each child is running his own race, and that the idea is to gain the number of pounds needed to bring the child up to weight. As soon as a child gains five pounds give him some special reward, not a prize, such as placing his name in the honour book."

12. "Draw a 'sleep tower' on the blackboard, 8″ high and 1″ wide. Under it write the number of children who slept 8 hours the night previous. Do the same for 9 hours, 10 hours and 11 hours. Which sleep tower has the most children in it? Which should have the most?

"Keep the towers on the board and every day write down under each tower the number of children who belong there

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[1] Bureau of Nutrition and Health Education, University of Texas, U.S.A *Health and Happiness*—Fourth Grade, p. 18.

that day. Try to get all the children into the 10 and 11 hour towers."[1]

13. Bring a neem twig or tooth brush to class and show the class how the teeth are cleaned. Have each boy bring a neem twig to class and have them practise the proper method of cleaning the teeth.

14. Health Week. An effective method of instilling ideas about health is to organize a health week, preferably in connection with the annual Health Week organized by the Public Health Department. The entire school should select a Student Health Officer and each class elect a Class Associate Health Officer. Each class in turn may elect special officers, such as Personal Cleanliness Expert, Normal Weight Expert, Regular Exercise Expert, Dentist, Good Posture Expert, Vaccination Expert, etc. All the personal cleanliness experts from all the classes should form a committee and elect a chairman. This should also be done for all the other experts. One teacher should be a member of each committee. These committees decide, with the help of the teacher, what can be done in each particular field of health within the class-room and on the playing field. The chairman of each committee and the student health officer form an executive committee to decide what can be done for the entire school.

The special committees may decide to keep a record of the cleanliness of each boy during the week. The normal weight committee may decide to weigh each student and find out how many boys in the school are underweight. The regular exercises committee may run a special tournament in which all the boys participate. The dental committee may find out how many boys clean their teeth regularly, how many boys have cavities, how many boys have given attention to their teeth during the week. The good posture committee may find out how many boys have poor posture in the school and may do something to encourage all boys to assume good posture. The vaccination committee may find out if any boys in the schools are not vaccinated and how many boys become vaccinated during the week.

The executive committee may arrange speakers for each

[1] *Op. cit.*, Fourth Grade, p. 22.

day for the assembly on each topic being considered by the special committees. They may decide to investigate the water supply for cleanliness and also the school compound. The diet of the hostel students may also be studied to see that it is suitable.

After health week the teachers should follow up the work and endeavour to keep the interest of the students alive regarding health.

A less ambitious health week might be organized, stressing only one topic such as normal weight.

15. Health Clubs. These may be organized within each class or for the whole school. Student officers should be elected (with a teacher adviser) and a definite programme worked out by the students for the year. The main objectives should be the development of health habits and ideals. The Indian Red Cross Society have worked out a programme for such clubs which can be obtained by writing to their headquarters at New Delhi.

16. Excursions. There is much value in seeing things in the community related to health and discussing them afterwards in the class-room. The Health Department Office, the Dispensary, the water supply, wells, shops in the bazaar, etc., can all be visited and used for educational purposes. Call attention to improperly constructed and polluted wells and unsanitary shops. Also point out good wells and clean shops.

17. Health charts. The following chart may be used in recording the health practices of students:—

HEALTH CHART.

Name... *Class*....................*Month and Year*....................

Day	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	Class
Body Cleanliness: Hair, Nails, Hands, Neck, Arms, Legs.	(Daily Inspection)	
Cleanliness of Clothing.	(Daily Inspection)	
Cleanliness of Teeth.	(Daily Inspection)	
Posture in School Room	(Mark when student continually assumes poor posture).	
General Habits: Spitting, Coughing, Use of Latrines, etc.	(Mark student for bad habits).	

(*Continued on next page*)

HEALTH CHART (*Continued*).

Care of Cuts and Wounds.	(Mark when not taken care of immediately and properly)
Vaccination.	(Mark if student has not been vaccinated within past seven years)
Structural or Functional Defects (Disease)	(Mark if nothing is being done to correct defects)
Breathing.	(Mark if student breathes through his mouth)
Team Membership: Intra-Class, Class or School.	(Mark if student is a member of no team)

Total Grade ....

The chart is marked only to indicate a failure to live up to the required health practices.

Each item should be marked on the basis of 10 points. For each mark made against a student 1 mark is deducted from his grade. Thus, 10 or more marks rate him zero for that item. This applies to the first six items.

The marks for each of the last four items will be either 10 or zero for the month.

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CHAPTER IV.

FUNDAMENTAL POSITIONS AND MOVEMENTS AND DESHI KASRAT.

IN order to teach intelligently marching and various forms of drill, with and without equipment, it is necessary to know the fundamental positions or movements. Once these are learned they may be combined in an infinite variety of movements. For instance, the fundamental movement, " Arms forward ", may be used with all the leg movements and many trunk movements ; one leg movement may be combined with all the possible arm movements, etc. Likewise in marching, the various movements may be combined, such as, " Right turn and one step forward ", or " Left wheel on right into line ".

I. MARCHING MOVEMENTS.

Fall . . . . In! (Form a line according to height: the small boys to the right and the large boys to the left.)

Attention! (Stand with heels together and feet forming a 45 degree angle ; keep head up, chin in, chest up, abdomen in and arms hanging loosely at the sides ; the shoulders are not raised.)

Right (or left) . . . . Dress! [Turn head to the right (or left) and at the same time place the right (or left) palm, with fingers together and pointed downward, on the side of the hip, with the elbow extending sidewards and just touching the person to the right (or left). The entire group moves to the left (or right) slightly to make up for the additional space used. The boy at the right (or left) of the line remains standing at attention. Straighten the line.]

Eyes . . . . Front! [Turn the head to the front and lower the right (or left) arm to attention. This is done after "Right (or left) . . . . dress!"

Eyes . . . . Right! (Turn the head to the right and straighten the line.)

Eyes . . . . Front! (Turn the head forward.)

Right . . . Extend! (All but the person at the extreme right turn their heads to the right and raise their right arms sideward so that the shoulder of the person to the right is touched. Come to position on command, "Eyes . . . . Front!")

Stand at . . . . Ease! (Step about ten inches to the left and clasp the hands behind the back.)

Stand . . . . Easy! (Step about ten inches to the left. The arms are free and the class is under no discipline.)

From the right (or left) . . . Number! [All turn eyes to the right (or left) except the boy at the extreme right (or left). The first boy says, "One!", the second boy, "Two!", at the same time snapping his head forward. The numbers continue, Three!, Four!, Five!, etc., until every boy has given his number.]

From the right (or left) in twos (or threes, or fours, etc.) . . . . Number! (Same as above except that they count off in twos, etc.)

Right (or left) . . . Turn! (In the right turn, turn on the right heel and left toes. Then bring the left foot to the right foot to the attention position. The knees are not bent throughout the movement.)

About . . . . Turn! (Is always to the right. Turn on the right heel and left toes, facing in the opposite direction ; then bring the left foot to the right to the attention position. Keep knees straight.)

Half-right (or left) . . . . Turn! [As right turning, but turn obliquely right (or left).]

One (or two or three, etc.) steps forward . . . . March! One! Two! (Step forward on the left foot and bring the right to the left. There is always one more count than the number of steps taken.)

One (or more) step backward . . . March! One! Two! (As above.)

One (or more) step to the right (or left) . . . . March! One! Two! (As above.)

Mark time . . . . March! (The balls of the feet should strike the ground first.)

Double time . . . . March! (Run forward, 180 steps to the minute.)

Half-step forward . . . March! (March forward, taking half the ordinary step.)

Forward . . . . March! (March forward with ordinary walking step, 120 steps to the minute.)

Backward . . . . March!

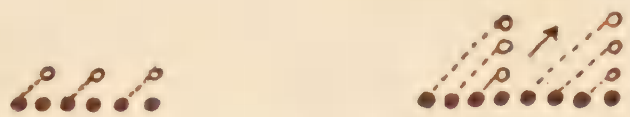
On the right (or left) form twos (or threes, fours, etc.) . . . . . March! One! Two! Three!



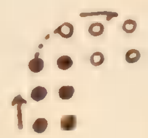
Re-form ranks . . . . March! (This is given after the above command or if the group are marching in a line.)



In front of right (or left) form twos (or threes, fours, etc.) . . . . March! One! Two! Three! (There is always one more count than the number of steps taken.)



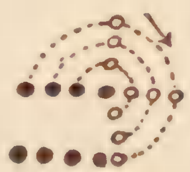
Right (or left) . . . . Wheel! (The pivot man turns in place when wheeling; when marching in twos, for two counts; when in fours, for four counts, etc. The "Wheel" command is given when the right foot strikes the ground. The count begins when the left foot next strikes the ground.)



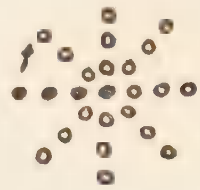
Right (or left) about . . . . Wheel!



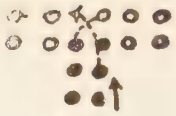
Three-quarters right (or left) . . . . Wheel! (This cannot be done with a large class. The first column wheels into the following columns and must mark time in place until they have passed by. All the columns close in on this movement.)



Full right (or left) . . . . Wheel! (The entire group gradually form the spokes of a wheel.)



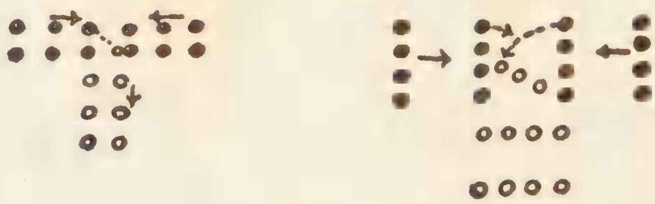
Right and left alternately . . . . Wheel! (The first column goes right, the second left, etc.)



Right (or left) incline forward . . . . March! (The entire group do a half turn and continue marching.)



Right and left alternately. Forming twos (or fours, etc.) . . . . Wheel! (This is given when two columns are marching towards each other and they form one group by alternate wheeling.)



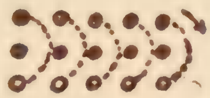
Right and left form twos (or fours, etc.) . . . . Wheel! (This is given when two columns are marching towards each other and the columns wheel, forming double-sized columns.)



Twos (or fours) right (or left) . . . . March! (When standing this is given in three counts; when marching, in two counts. Always start with the left foot.)



Twos (or fours) right (or left) about . . . . March! (When not marching forward, one extra count is added).



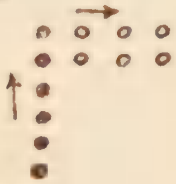
Twos (or fours) three-quarter right (or left) . . . March!



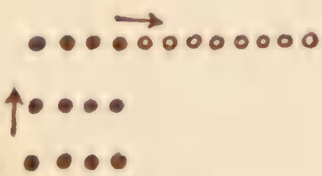
Twos (or fours) full right (or left) . . . . March! (17 counts when standing in columns of fours.)



By a right (or left) turn form twos (or threes, fours, etc.) . . . March! (When turning right the command is given on the right foot. Step forward on the left and turn. Opposite on turning left.)



By a right (or left) turn into file . . . . March! (Given when marching in columns. When turning right the command is given on the right foot. Step forward on the left and turn. Opposite on left turning.)



On right (or left) into line . . . . March! [Marching in file or in columns. The first person or column marks time in place and the group form a line to the right (or left) of him or it.]



Right (or right about or three-quarter right) wheel on left into line . . . . March! (The first column wheels the proper distance and marks time. The other columns form a line to the left.)





Right (or left) by fours . . . . March! (March in line. The four on the right go forward, the other fours doing a fours right and following after the column on the right.)



Fours full right (or left) rear four forward . . . March! [The fours do a three-quarter right (or left) ; the last four do a full march and march in front of the other columns. After passing a four each four complete their full march and follow after the last four.]



Right (or left) turn, on the right (or left) form twos (or fours) . . . . March!

2. Fundamental Body Movements.

(*a*) Arm movements.

Arms forward . . . . Raise! (Palms are down, fingers together. Fig. 1.)

Arms forward-upward . . . . Raise! (Palms facing Fig. 2.)

Arms upward . . . . Raise! (Hands are raised near the front of the body.)

Arms sideward . . . . Raise! (Palms facing downward. Fig. 3.)

Arms sideward-upward . . . . Raise!

Arms sideward with palms up . . . . Raise!

Elbows sideward . . . . Raise! (Hands are near chest with palms down. Fig. 4.)

Arms . . . . Bend! (Fig. 5.)

Arms forward . . . . Bend! (Fig. 6.)

Arms sideward . . . . Bend! (Fig. 7.)

Hands on neck . . . . Place! (Fig. 8.)

Hands on shoulders . . . . Place! (Fig. 9.)

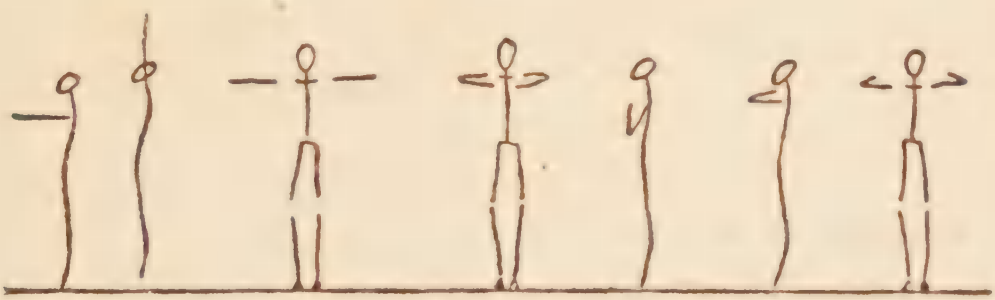
Hands on head . . . . Place! (Fig. 10.)

Arms inward circle upward . . . Raise! (Fig. 11.)
Arms inward circle to sideward . . . . Raise!
Arms inward circle downward (from upward raise) . . . . Swing! (Fig. 12.)
Position! (Return to original position, after any movement.)
Stretch! (A good execution command, to be used for arms sideward or upward movements.)
Hands on hips . . . . Place! (Fig. 13.)

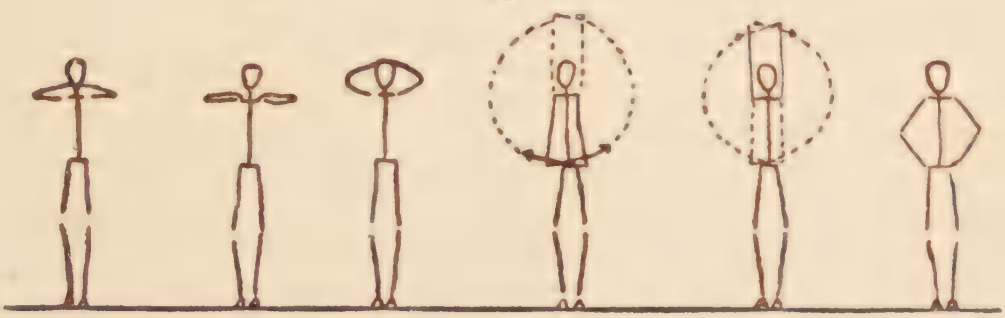
(*b*) Leg movements.

Half-knee . . . Bend! (Keep head up. Fig. 14.)
Deep-knee . . . . Bend! (Fig. 15.)

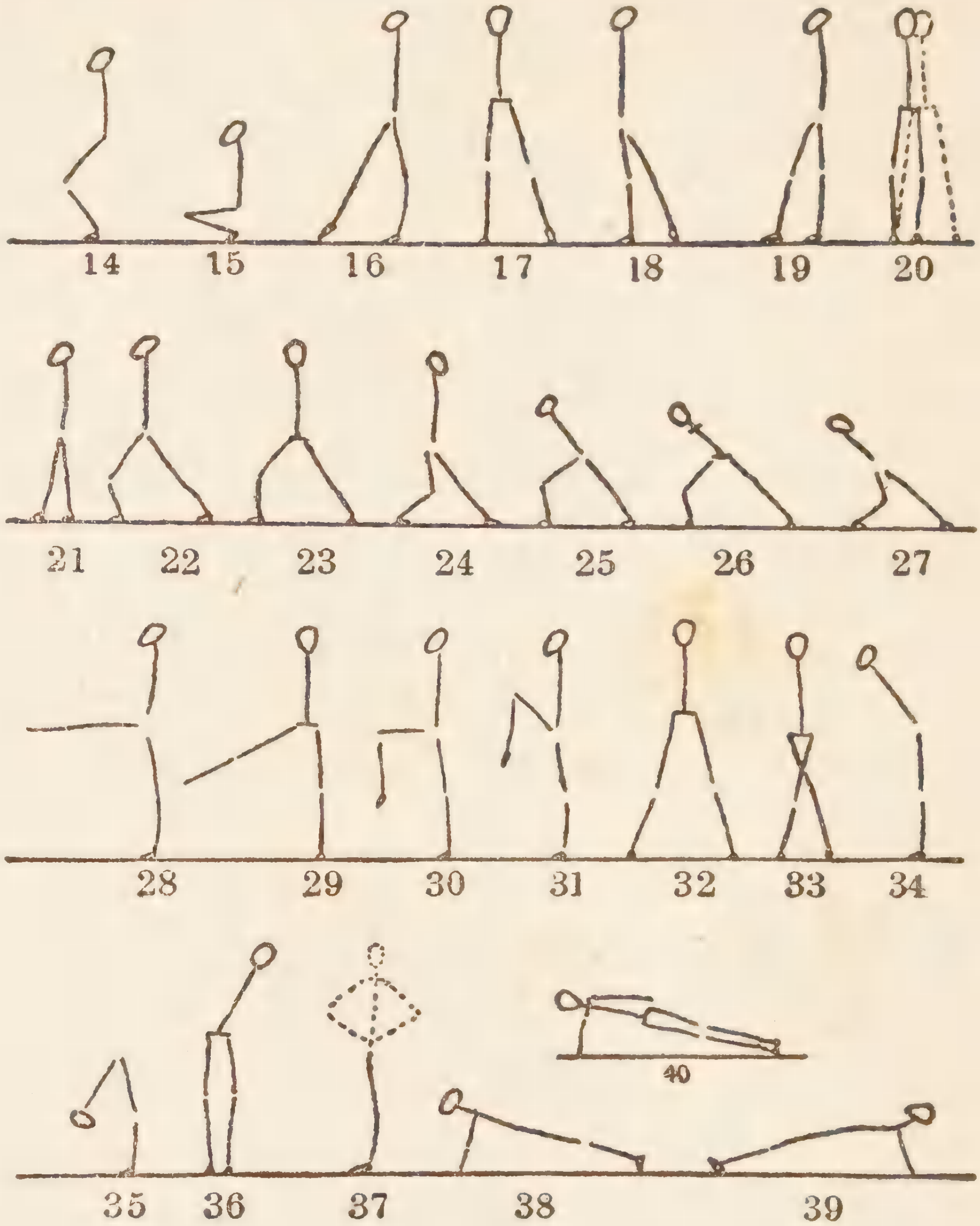
Right (or left) toe	forward	. . .	Touch!	(Fig. 16.)
Right (or left) toe	sideward	. . .	Touch!	(Fig. 17.)
Right (or left) toe	backward	. . .	Touch!	(Fig. 18.)
Right (or left) foot	forward	. . .	Place!	(Fig. 19.)
Right (or left) foot	sideward	. . .	Place!	(Fig. 20.)
Right (or left) foot	backward	. . .	Place!	(Fig. 21.)
Right (or left) leg	forward	. . .	Charge!	(Fig. 22.)
Right (or left) leg	sideward	. . .	Charge!	(Fig. 23.)
Right (or left) leg	backward	. . .	Charge!	(Fig. 24.)



1 2 3 4 5 6 7



8 9 10 11 12 13



Right (or left) leg forward . . . . Lunge! (Fig. 25.)
Right (or left) leg sideward . . . . Lunge! (Fig. 26.)
Right (or left) leg backward . . . . Lunge! (Fig. 27.)
Right (or left) leg forward-oblique . . . . Lunge!
Right (or left) leg forward . . . . Raise!
(Toe pointed.) (Fig. 28.)
Right (or left) leg sideward . . . . Raise! (Fig. 29.)
Right (or left) leg backward . . . . Raise!
Right (or left) leg cross-forward . . . . Raise!
Right (or left) knee forward . . . . Raise! (Fig. 30.)
Right (or left) knee upward . . . . Raise! (Fig. 31.)
Forward . . . .Kick! (From forward knee raised position.)
Feet apart . . . . Jump! or Stride stand position . . . . Jump!
(Fig. 32.)

Walk stand position . . . . Jump!
Cross stand position . . . . Jump! (Fig. 33.)

(*c*) Trunk movements.
Trunk forward . . . . Bend! (Head up, back straight. Fig. 34.)
Trunk forward-downward . . . . Bend! (Fig. 35.)
Trunk left (or right) . . . . Bend! (Fig. 36.)
Trunk left (or right) . . . . Twist! (Do not move hips. Fig. 37.)
Chest . . . . Up! (Raise chest, but not shoulders.)
Abdomen . . . . In! Up!
Trunk circumduction: bend forward, to the right side, backward, to the left side and forward, continuously.
Trunk forward-downward-oblique . . . . Bend!
Backward bending. (Not recommended for general use.)

(*d*) Head movements.
Chin . . . . In!
Head. . . . Up! Straight!
Head backward . . . . Bend! (With chin in.)
Other head movements not usually used.

(*e*) Finger movements are a waste of time and are not given.

(*f*) Other body movements.
Dand or front leaning rest exercise: Deep knee bend . . . . One! Rest on hands, extend legs backward . . . . Two! (Keep back straight, head up. Fig. 38.)
Back leaning rest. One! Two! (Fig. 39.)
Right (or left) side leaning rest. (Turn from front leaning rest. Fig. 40.)
Running in place . . . . Begin!
Upward . . . . Jump!
Forward . . . . Jump!
Sideward . . . . Jump!
Backward . . . . Jump!
Hopping in place . . . . Begin!
Hopping alternately, twice on one foot and twice on the other . . . . Hop!
Same, raising legs alternately forward, sideward or backward.
Same, with alternate knee raising.
Same, with alternate toe touching, forward, sideward or backward.
Same, with one foot in front of the other, raising front leg forward and back leg alternately.
Same, crossing one leg in front of the other alternately.
Hopping once on each foot, raising legs alternately sideward . . . . Begin!
Same, raising legs alternately forward (or backward).
Same, with one foot in front of the other, raising front leg forward and back leg backward.
Feet apart and return . . . . Begin!

Walk hopping . . . . Begin!
Feet apart and return to cross position . . . Begin!

3. Wand Positions.

These can be combined with many leg and trunk exercises, making possible a large variety of movements. For instance, a movement such as chest horizontal may be combined with all the possible leg movements suggested in 2.

Marching position. Hold wand at right side like a gun, the top reaching no further than the tip of the head. (Fig. 2.)

Thigh horizontal . . . . One! Two! (From the above position. On 'One'! grasp wand with left hand; on 'Two'! bring it to thigh horizontal. Fig. 1.)

Feet horizontal . . . . Bend! (Fig. 3.)
Feet horizontal right (or left) . . . . Bend! (Fig. 4.)
Knee horizontal . . . . Bend!
Knee horizontal right (or left) . . . . Bend!
Chest horizontal . . . . Bend! (Fig. 5.)
Chest horizontal right (or left) . . . . Stretch! (Fig. 6.)
Front horizontal . . . . Raise! (Fig. 7.)
High horizontal . . . . Raise! (Fig. 8.)
High horizontal right (or left) . . . . Raise! (Fig. 9.)
Head horizontal . . . . Raise! (Fig. 10.)
Head horizontal right (or left) . . . . Raise! (Fig. 11.)
Neck horizontal . . . . Raise! (Fig. 12.)
Neck horizontal right (or left) . . . . Raise! (Fig. 13.)
Shoulder horizontal . . . . Raise! (Fig. 14.)
Back horizontal . . . . Place!
Side horizontal right (or left) . . . . Raise!
Front cross horizontal . . . . Raise! (The arms are crossed.)

Arm horizontal right (or left) . . . . Raise! (Raise one arm forward and place the other under the armpit. Fig. 15.)

Front vertical . . . . Raise! (Either arm up. Fig. 16.)
Front vertical high . . . . Raise! (Fig. 17.)
Front vertical low . . . . Extend! (Fig. 18.)

Thigh vertical . . . . Place! (Extend one arm down and raise the other to the opposite shoulder. Fig. 19.)

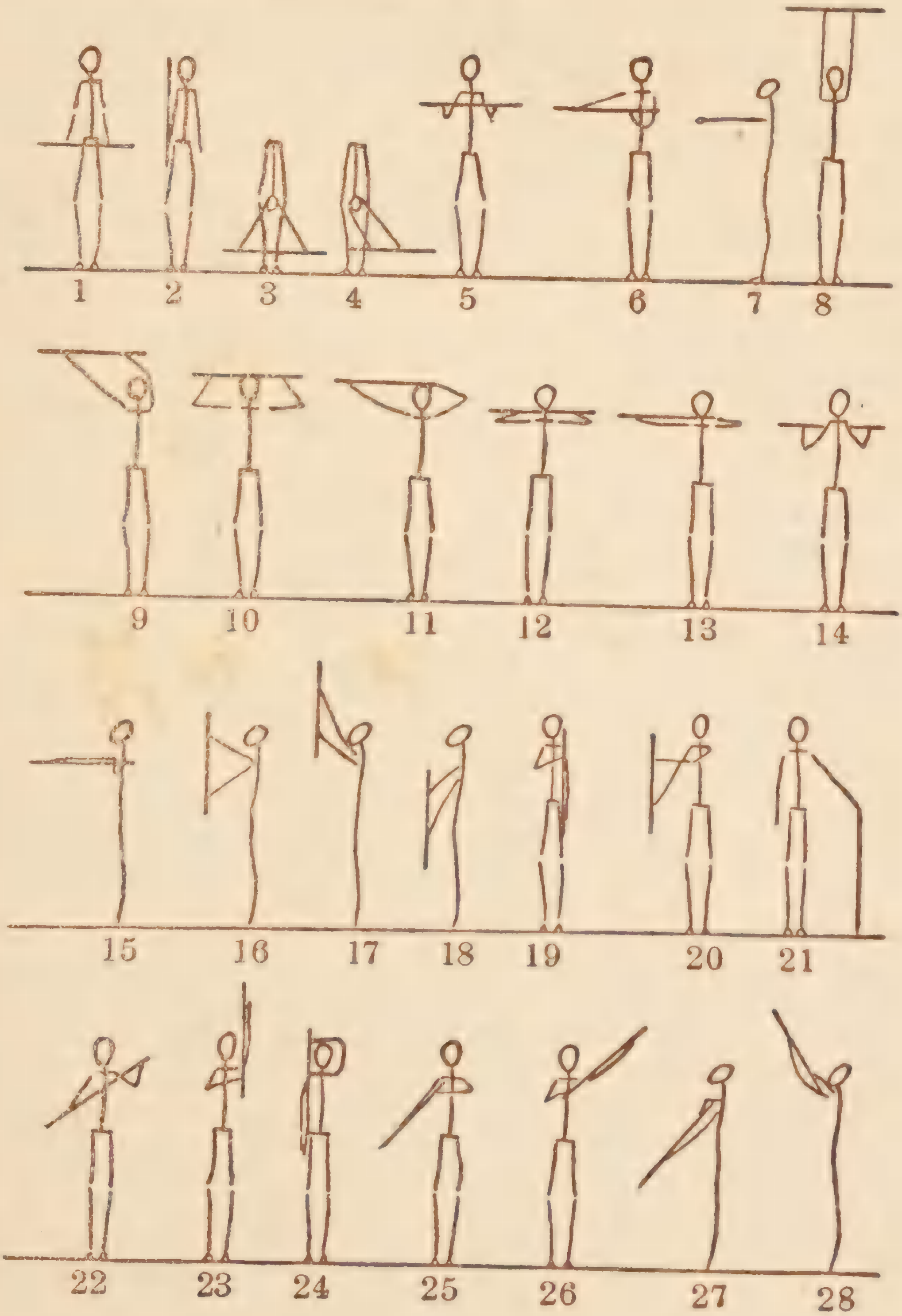
Side vertical . . . . Raise! (Fig. 20.)
Side vertical low . . . . Place! (Fig. 21).
Back half-vertical . . . . Raise! (Fig. 22).

Head and arm vertical . . . . Raise! (Extend one arm down and place the opposite fore-arm on the head. Fig. 24.)

Arm vertical high . . . . Raise! (Raise one arm upward and place the other under the opposite armpit. Fig. 23.)

Half-vertical sideward low . . . . Stretch! (Fig. 25.)
Half-vertical sideward high . . . . Raise! (Fig. 26.)

Half-vertical forward low . . . . Stretch! (Fig. 27.)
Half-vertical forward high . . . . Raise! (Fig. 28.)
Halt-vertical oblique-forward low . . . . Stretch!
Half-vertical oblique-forward high . . . . Raise!
Half-vertical oblique-backward low . . . . Stretch!
Half-vertical oblique-backward high . . . . Raise![1]



[1] Most of the above wand positions were taken from *Calisthenic Nomenclature,* by J. H. McCurdy, pp. 48-61.

4. Indian Club Movements.

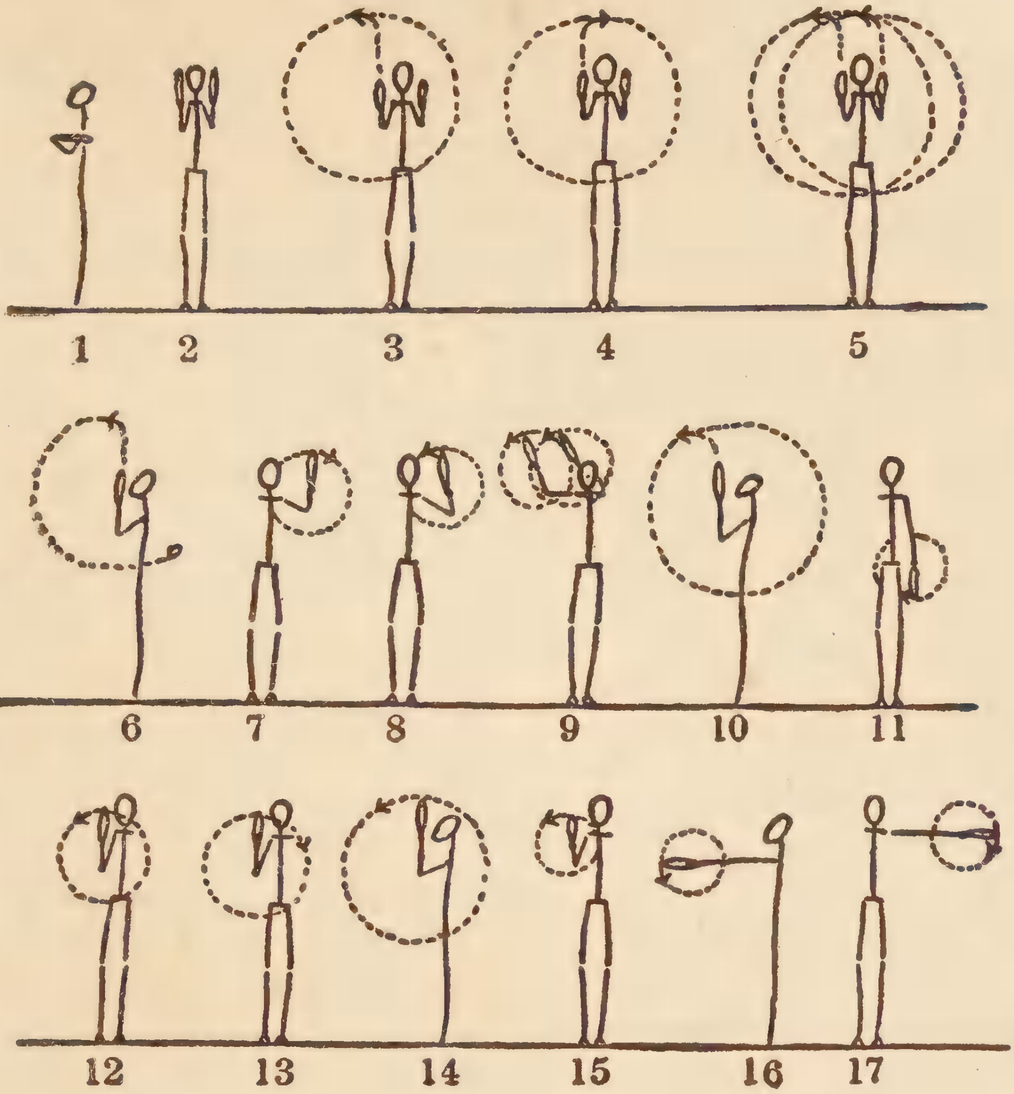
Marching position. Place clubs under armpits with forearms raised forward holding handles of clubs. (Fig. 1.)

Thigh vertical . . . . Down! (Arms are at sides with clubs extending downward.)

Fundamental position . . . . One! Two! (Raise arms sideward-upward on One!; bend arms, bringing hands in front of chest with clubs extending upward and parallel on Two! Fig. 2.)

From fundamental position :

Right (or left) arm outward circling . . . . Begin! (Fig. 3.)
Right (or left) arm inward circling . . . . Begin! (Fig. 4.)
Double arm outward (or inward) circling . . . . Begin!
Double arm circling to the right (or left) . . . . Begin! (Fig. 5.)
Right (or left) half-circle forward . . . . Begin! (Fig. 6.)
Double half-circle forward . . . . Begin!
Double half-circle outward, crossing clubs . . . . Begin!
Double three-quarter-circle inward to arms sideward . . . . Begin!
Right (or left) three-quarter-circle inward to arms sideward . . . . Begin!
Outward shoulder circle . . . . Begin! (Fig. 7.)
Inward shoulder circle . . . . Begin! (Fig. 8.)
Right (or left) outward circle with outward shoulder circle . . . . Begin!
Right (or left) inward circle with inward shoulder circle . . . . Begin!
Double outward circle with outward shoulder circle . . . Begin!
Double inward circle with inward shoulder circle . . . . Begin!
Double inward circle with inward head circle . . . . Begin!
Double circle right (or left) with double right shoulder circle . . . . Begin!
Double shoulder circle right (or left) . . . . Begin! (Fig. 9.)
Right (or left) forward circle . . . . Begin! (Fig. 10.)
Right (or left) backward circle . . . . Begin!
Alternate forward circle . . . . . Begin!
Alternate backward circle . . . . Begin!
Double forward circle . . . . Begin!
Double backward circle . . . . Begin!



Alternate outward circle . . . . Begin!
Alternate inward circle . . . . Begin!
Alternate outward circle with outward shoulder circle . . . . Begin!
Alternate inward circle with inward shoulder circle . . . . Begin!
Outward lower back circle . . . . Begin! (Fig. 11.)
Right (or left) outward circle with outward lower back circle . . . . Begin!
Alternate outward circle with lower back circle . . . . Begin!
Right (or left) outward forearm circle . . . . Begin! (Fig. 12.)
Right (or left) inward forearm circle . . . . Begin! (Fig. 13.)
Double outward forearm circle right (or left) . . . . Begin!
Alternate outward forearm circle . . . . Begin!
Right (or left) forward circle to opposite side . . . . Begin! (Fig. 14.)
Alternate forward circle to opposite side . . . . Begin!
Outward wrist circle . . . . Begin! (Fig. 15.)
Inward wrist circle . . . . Begin!

Arms forward, outward wrist circle . . . . Begin! (Either outer or inner side of arm. Fig. 16.)

Arms forward, inward wrist circle . . . . Begin! (Either outer or inner side of arm.)

Arms sideward, inward (or outward) wrist circle . . . . Begin! (Fig. 17.)

Arms upward, inward (or outward) wrist circle . . . . Begin!

Right (or left) outward circle with outward wrist circle sideward . . . . Begin!

Right (or left) inward circle with inward wrist circle sideward . . . . Begin!

Right (or left) outward circle with outward wrist circle upward . . . . Begin!

Right (or left) inward circle with inward wrist circle upward . . . . Begin!

From thigh vertical position :

Arms sideward raise and return, crossing clubs in front of thighs . . . . Begin!

Arms sideward-upward raise and return, crossing clubs in front of thighs . . . . Begin!

Right (or left) arm forward raise and return, swinging backward . . . . . Begin!

Both arms forward raise and return, swinging backward . . . . Begin!

Arms forward raise alternately and return swinging backward . . . . Begin!

Double arm swinging left sideward raise and right sideward raise continuously . . . . Begin!

Outward wrist circle . . . . Begin!

Inward wrist circle . . . . Begin!

Forward and backward wrist circles . . . . Begin!

Right (or left) outward circle with shoulder circle and lower back circle . . . Begin!

Both arms outward circle with shoulder circle and lower back circle . . . . Begin!

Arms outward circle alternately with shoulder circle and lower back circle . . . . Begin!

5. Dumb-bells.

These can be used with all the arm movements under fundamental body movements and combined with all the other body exercises.

Bell clicking movements (*the bells are clicked on each movement*).

(*a*) *From attention position* (*arms at sides*) :

Arms forward raise (click), arms down (click). (The ends of the dumb-bells nearest the thumbs are clicked together.)

Arms forward-upward raise (click), arms down (click).

Arms forward (click), upward (click), forward (click), down (click).

Arms sideward-upward (click), arms down (click).

Arms bend (click), arms down (click). (On bend the small finger sides of dumb-bells click, the fingers facing the chest; on down movement the thumb sides click, the fingers facing the thighs.)

Arms bend (click), forward (click), bend (click), down (click).

Arms bend (click), upward (click), bend (click), down (click).

Arms bend (click), side, bend (click), down (click).

Arms bend (click), down and click in back of hips.

Arms forward-upward (click), down and click in back of hips.

Arms sideward-upward (click), down and click in back of hips.

Arms forward (click), down and click in back of hips.

Left (or right) knee forward raise (click under knee) ; knee down (click in front of thighs).

Alternate knees forward raise (click under knee) ; knee down (click in front of thighs).

Left (or right) leg forward raise (click under thigh) ; leg down and click in front of thighs.

Alternate legs forward raise (click under thigh) ; leg down and click in front of thighs.

Left (or right) leg forward oblique raise (click under thigh) ; leg down and click in front of thighs.

Alternate legs forward oblique raise (click under thigh) ; leg down and click in front of thighs.

Left (or right) leg forward lunge (click under forward knee) ; return to position (click in front of thighs).

Alternate legs forward lunge (click under forward knee) ; return to position (click in front of thighs).

Left (or right) leg sideward (or oblique) lunge (click under extended knee) ; return to position (click in front of thighs).

Combine all arm movements with leg movements under 2, *Fundamental Body Movements* (*b*). For example:

Left toe forward touch with arms forward raise (click) ; return to position (click in front of thighs).

Deep knee bend, arms sideward-upward (click) ; return to position (click in front of thighs).

Trunk forward bend (click behind knees).

Trunk forward-downward bend (click behind ankles).

Running in place (click in front of thighs on each step).

Hopping in place (click in front of thighs on each hop).

Alternate leg hopping (click on each hop in front of thighs).

Same, raising legs forward ; sideward.

Alternate hopping twice on one foot and twice on the other (click on each hop).

Same, raising legs forward ; sideward.

Jumping one-quarter left (or right) turn (click at arms bend) ; arms down (click).

Forward running (click on each step).

Forward hopping (click on each hop).

(*b*) *From arms bend position* (*bells in front of chest*) *:*

Arms down (click), return (click).

Same, with arms forward ; arms upward ; arms sideward ; arms in back of hips ; striking under knee forward raised ; lunging forward, sideward, oblique ; leg raising ; trunk bending ; running ; hopping, turning, jumping.

(*c*) *Feet apart or stride stand position :*

(1) With arms at sides.

All the arm movements.

Trunk forward bend (click behind hips) ; raise (click in front of thighs).

Trunk forward bend [click under left (or right) knee] ; raise (click in front of thighs).

Trunk forward bend (click under alternate knee) ; raise (click in front of thighs).

Trunk forward-downward bend [click behind left (or right) ankle] ; return (click in front of thighs).

Trunk forward-downward bend (click behind alternate ankles) ; return (click in front of thighs).

Trunk forward-downward bend (swing arms between legs and click) ; return (click in front of thighs).

(2) With arms bend.

All the arm movements under (*b*).

Trunk movements under (*c*) (1).

(3) With arms sideward raised.

Arm movements forward ; upward ; downward ; backward.

Trunk movements under (*c*) (1).

(4) With arms upward raised.

Arm movements forward ; forward-downward ; sideward ; side-downward ; back of hips.

Trunk movement under (*c*) (1).

(*d*) *A few four count movements :*

(1) Arms bend position.

Trunk forward-downward bend (click behind ankles) ; raise, arms bend (click) ; arms upward (click) ; arms bend (click).

(2) Attention position.

Deep knee with arms bend (click) ; rise with arms down (click) ; arms bend (click) ; arms down.

Forward lunge left with arms bend (click) ; click under left knee ; arms bend (click) ; return to position (click).

Feet apart jump with arms bend (click) ; trunk forward-downward bend (click behind ankles) ; trunk raise with arms bend (click) ; feet together jump with arms down (click).

Deshi Kasrat.

The Indian exercises known as *Deshi Kasrat* provide for a number of the possible combinations of the fundamental

movements of the body. They are exercises which, according to Dr. A. G. Noehren,[1] have their origin in the ancient religious ceremonies of the Indians. They are fine exercises for drill purposes when used with less strenuous movements. A lesson containing these exercises alone would be too strenuous for the average boy. Undoubtedly these movements were originally meant for adults.

The following are the common *deshi kasrat* exercises:

1. NIHURS.

(*a*) *Ekhathi nihur:*

Fundamental Position: feet apart with right arm sideward bend, fist closed.

One! (Trunk forward bend to the left, extending right fist in front of left ankle; the left knee is bent, with the left forearm resting on left thigh).

Two! (Trunk raise with left arm sideward bend and right arm at side).

Three! (Trunk forward bend to the left, extending left fist in front of right ankle; left knee is bent with the left forearm resting on it).

Four! (Return to fundamental position.)

(Continue in rhythm.)

(*b*) *Duhati nihur:*

Fundamental position; arms upward raised, with feet apart.

One! (Arms bend, with fists closed, palmar side facing outward.)

Two! (Trunk forward bend to the left, extending fists, the right on the right side and the left on the left side of the right knee.)

Three! (Trunk raise with arms bend.)

Four! (Arms upward stretch.)

Repeat on opposite side.

(Continue right and left in rhythm.)

(*c*) *Hath paun pasar munh pher nihur:*

Fundamental position: feet apart with arms upward raised.

One! (Arms bend, with fists closed, palmar side facing outward.)

Two! (Right turn, bending the right knee and extending the fists forward.)

Three! (Raise arms and come to fundamental position.)

(Repeat alternately right and left in rhythm.)

[1] A. G. Noehren, *Handbook of Physical Activities for Indian Schools*, p. 4.

2. Baithaks.

(*a*) *Sadi baithak :*

Fundamental position: raise arms backward with fists closed.
One! (Deep knee bend and extend arms forward.)
Two! (Return to fundamental position.)
(Repeat in rhythm.)

(*b*) *Kud baithak :*

Fundamental position: feet apart with arms backward raised, fists closed.

One! (Jump forward 12 inches to a deep knee bend, thrusting the arms forward. The feet are together; thumbs are stretched and touching.)

Two! (Return to fundamental position.)
(Repeat in rhythm.)

(*c*) *Chakkar kud baithak :*

Same as above, but with a quarter right or left turn when returning to fundamental position.

(*d*) *Muh pher kud baithak :*

The same as (*b*), with a left or right about turn when returning to fundamental position.

(*e*) *Age piche paon kud baithak :*

Fundamental position: walk stand position.

One! (Raise arms backwards and swing forward to forward raised, at the same time jumping forward 9 inches to deep knee bend. The fists are closed with the thumbs sidewards and the tips touching each other.)

Two! (Jump to walk stand position with right leg advanced and at the same time raise arms upward and down to arms bend.)

(*f*) *Ek paun pasar baithak :*

Fundamental position: feet apart with arms bend, fists closed with palmar side facing front.

One! (One-quarter right turn, left leg deep knee bend, extending the right leg forward; at the same time thrust arms to forward raise with fists closed, thumbs sideward raised with tips touching.)

Two! (Return to fundamental position.)
Three! (Same as in One! on left side.)
Four! (Return to fundamental position.)

(*g*) *Ang marod baithak :*

Fundamental position: deep knee bend, placing forearms on thighs with fists closed.

One! (One-quarter turn right, moving feet slightly.)
Two! (Turn, facing left.)
(Repeat right and left in rhythm.)

(*h*) *Ghitna mod baithak :*

Fundamental position: deep knee bend, placing hands on knees.
One! (Jump and alight with right foot backward placed with knee bent, and left foot advanced slightly forward with knee bent.)
Two! (Jump and reverse the position.)
(Repeat in rhythm.)

(*i*) *Hanuman baithak :*

Fundamental position: half knee bend, feet apart, with arms forward raised, palms facing forward, finger tips touching.
One! (Jump to one-quarter left turn, left foot forward placed: left arm sideward bent, elbow near side with open palm facing forward near shoulder; right arm lowered to side.)
Two! (Jump one-quarter turn right to fundamental position.)
Three! (Same as One! with one-quarter turn right.)
Four! (Jump one-quarter turn left to fundamental position.)
(Repeat in rhythm.)

(*j*) Leg forward stretching *baithak :*

Fundamental position: attention.
One! (Deep knee bend, arms at sides and touching ground.)
Two! (Stretch right leg forward with left elbow sideward raised, thumb touching the chest, fist closed.)
Three! (Return to One! position.)
Four! (Rise to fundamental position.)
(Repeat alternately right and left in rhythm.)

(*k*) Leg sideward stretching *baithak :*

Fundamental position: attention.
One! (Deep knee bend, arms at sides and touching ground.)
Two! (Stretch the right leg sidewards, right elbow sideward raised, thumb touching the chest.)
Three! (Return to One! position.)
Four! (Return to fundamental position.)
(Repeat alternately right and left in rhythm.)

(*l*) Forward bending *baithak :*

Fundamental position: kneel, body straight with hands on ground in front of knees.
One! (Trunk forward bend, head nearly touching the ground.)
Two! (Return to fundamental position with left arm sideward bent, palm open and facing forward.)
Three! (Repeat One!)
Four! (Return to fundamental position with right arm sideward bent, palm open and facing forward.)
(Repeat in rhythm.)

Variations:

(1) As above with arms forward-upward raise.
(2) As above, but raise one elbow sideward, thumb touching chest.

(3) As above, with one elbow sideward raised and the other arm forward raised.

(4) As above, except that when the trunk is raised it is twisted to the right (or left) side, placing finger tips on the ground.

(5) As above, except that when the trunk is raised it is bent to the right (or left) side, the head is turned toward the side of the bend ; the arms are raised upward, forming a circle with the finger tips touching.

(*m*) Leg backward stretching *baithak :*

Fundamental position: half knee bend with elbows resting on the thighs.

One! (Left toe backward touching, increase bend of right knee, left elbow sideward raise, fist closed, thumb touching chest.)

Two! (Return to fundamental position.)

Three! (Same as One! on opposite side.)

Four! (Return to fundamental position.)

(*n*) *Baithak* from forward-downward bend position with hands flat on the ground in front of feet ; feet apart:

(1) Fundamental position: as above.

One! (Raise head and do a deep knee bend between the hands.)

Two! (Return to fundamental position.)

(Repeat in rhythm.)

(2) Fundamental position: as above.

One! (Raise head and do a deep knee bend, the left knee between the hands and the right outside the right hand.)

Two! (Return to fundamental position.)

Three! (Same as One! on opposite side.)

Four! (Return to fundamental position.)

(Repeat alternately in rhythm.)

(3) Fundamental position: as above.

One! (Deep knee bend with both knees outside the right arm.)

Two! (Return to fundamental position.)

Three! (Same as One! on opposite side.)

Four! (Return to fundamental position.)

(Repeat alternately in rhythm.)

3. DANDS.

(*a*) *Sada dand :*

Fundamental position: from the deep knee bend position reach forward and place the hands on the ground so that the knees are about two inches from the ground and the back straight.

One! (Straighten the legs and move the trunk forward with arms bent so that the chest nearly touches the ground and immediately straighten the arms, keeping the back straight.)

Two! (Return to fundamental position.)

(Repeat slowly in rhythm.)

(*b*) *Kud baithak dand :*

Fundamental position: feet apart with arms backward raised, fists closed.

One! (Jump forward to deep knee bend with arms forward raised, fists closed and thumbs raised sidewards and touching.)

Two! (Lean forward on the hands with legs and thighs bent, knees nearly touching the ground.)

Three! (Straighten the legs and move the trunk forward, bending the arms so that the chest nearly touches the ground and immediately straighten the arms, keeping the back straight.)

Four! (Return to fundamental position.)

(Repeat slowly in rhythm.)

(*c*) *Jhanda dand :*

Fundamental position: attention.

One! (Deep knee bend with arms upward raised, palms forward, thumbs extended and touching.)

Two! (Extend the arms forward on the ground, leaning forward and keeping knees and thighs flexed, knees nearly touching the ground, back straight.)

Three! (Straighten the legs, moving the trunk forward, bending the arms so that the chest nearly touches the ground and then straighten the arms, keeping back straight.)

Four! (Return to fundamental position.)

(Repeat slowly in rhythm.)

(*d*) *Twisting dand :*

Fundamental position: stretch arms forward on the ground from the deep knee bend position, leaning forward and keeping thighs and knees bent, the knees nearly touching the ground.

One! (Stretch legs, moving the trunk forward, chest nearly touching the ground, with arms bent.)

Two! (Bend left leg in back of right thigh and place toes on the ground ; at the same time reach back with the right hand and touch left foot.)

Three! (Return to One! position.)

Four! (Return to fundamental position.)

(Repeat right and left slowly in rhythm.)

(*e*) *Sinh baithak dand :*

Fundamental position: attention.

One! (Deep knee bend, placing hands on the ground between the legs.)

Two! (Stretch legs backward and bend the arms, then straighten the arms, keeping back straight.)

Three! (Return to One! position.)

Four! (Return to fundamental position.)

(Repeat in rhythm.)

(*f*) *Hanuman dand :*

Fundamental position: deep knee bend with one leg extended backward, the hands being placed on the ground from hanging at sides position.

One! (Reverse the position of the legs.)

Two! (Again reverse the position of the legs.)

(Continue alternately in rhythm.)

(*g*) *Munh per sinh baithak dand :*

Fundamental position: deep knee bend, stretching hands forward on the ground and leaning forward with legs and thighs bent, knees nearly touching the ground.

One! (Stretch the legs, moving the trunk forward, bending arms so that chest nearly touches the ground and then straighten the arms, keeping the back straight.)

Two! (Return to fundamental position, but do a right about turn.)

(*h*) *Chakkar dand :*

Fundamental position: deep knee bend with right leg stretched to the side, hands on ground.

One! (Swing the right leg in front of the body in a circle and as it circles on the left side extend both legs backwards to a front leaning rest position.)

Two! (Jump to deep knee bend, extending left leg to the side.)

Three! (Swing left leg in a circle as in One!)

Four! (Deep knee bend, extending right leg to the side.)

(*i*) *Frog dand :*

Fundamental position: front leaning rest position.

One! (Bend the arms and straighten them quickly, propelling the body forward about six inches.)

Two! As one lands from above movement, immediately bend the arms and propel the body forward another six inches.)

Three! (As one lands from Two! movement, immediately bend the arms and straighten them, propelling the body back six inches.)

Four! (Repeat Three!)

(*j*) *Frog dand* with clapping:

Same as frog dand, except that the hands are clapped when the body is moving forward or backward in the air.

(*k*) *Ek pairi dand :*

Fundamental position: front leaning rest with one leg raised off the ground either straight or bent.

One! (Bend the arms so that the chest nearly touches the ground.)

Two! (Straighten the arms and change the position of the legs.)

(*l*) *Karwat dand :*

Fundamental position: front leaning rest.
One! (Bend the arms so that the chest nearly touches the ground.)
Two! (Turn the body so that it is balancing on the left hand and left toes.)
Three! (Return to One! position.)
Four! (Return to fundamental position.)

(*m*) *Ek hatthi dand :*

Fundamental position: front leaning rest on one arm with the other behind the back.
One! (Bend the arms and lower the trunk near the ground.)
Two! (Raise.)
(Repeat on both sides.)

(*n*) *Garudasan dand :*

Fundamental position: front leaning rest, but place the sole of the left foot on the right thigh just above the knee; the thigh is flexed with the buttocks raised.
One! (Bend the arms so that the chest nearly touches the ground; keep back straight.)
Two! (Raise and return to fundamental position.)

(*o*) *Sharir toul dand :*

Fundamental position: deep knee bend, placing hands between the legs on the ground.
One! (Place the knees just above the elbows and lean forward so that the feet are off the ground and one is balancing on his hands.)
Two! (Return to fundamental position.)

4. Daur.

(*a*) *Tana peon daur :*

Stand in single file.
Forward stiff-legged . . . . Run! (The arms are bent and one runs forward stiff-legged, advancing six inches on each step.)

(*b*) *Kulachhu daur :*

Stand in single file.
Forward . . . . Run! (Run forward and on each step strike one heel against the buttocks and extend the opposite arm forward with fist closed.)

(*c*) *Kud baithak daur :*

Stand in single file.
One! (Jump forward to a deep knee bend, raising the arm sideward with fists closed.)

Two! (Jump forward to attention position with arms forward raised.)

(Repeat slowly in rhythm.)

Typical Drills for Class or Exhibition Purposes.

The counting is as follows:—1, 2, 3, 4, 5, 6, 7, 8, 8, 7, 6, 5, 4, 3, 2, change, being 16 counts. The movements are continuous until the drill is finished.

1. Free Hand Drill.

(*a*) March on field in file. On the right form fours. Open order in six counts.

(*b*) 1, 2 Left knee forward raise with elbows sideward raise.
3, 4 Left foot sideward place with arms sideward raise.
5, 6 Same as 1, 2.
7, 8 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(*c*) 1, 2 Knee forward raise with arms bend.
3, 4 Toe forward touch with arms upward raise.
5, 6 Same as 1, 2.
7, 8 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(*d*) 1, 2 Deep knee bend with arms forward raise.
3, 4 Arms sideward fling.
5, 6 Return to 1, 2.
7, 8 Position.
(Continue for 32 counts.)

(*e*) 1, 2 Arms press down, chest up.
3, 4 Trunk foward bend with hands on neck.
5, 6 Trunk raise with arms sideward press, chest up.
7, 8 Position.
(Continue for 32 counts.)

(*f*) 1, 2 Charge forward with hands on neck.
3, 4 Trunk forward bend, balancing on the foot with arms sideward raised.
5, 6 Return to 1, 2.
7, 8 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(*g*) 1, 2 Stride stand position with right arm sideward bend.
3, 4 Trunk forward-downward bend, thrusting right fist toward left foot, left forearm resting on left thigh.
5, 6 Return to 1, 2.
7, 8 Position.
(Left, 16 counts ; right, 16 counts ; alternate 16 counts.)

(*h*) 1, 2 Deep knee bend with arms between legs.
3, 4 Dand position, back straight.
5, 6 Return to 1, 2.
7, 8 Position.
(Continue for 32 counts.)

(*i*) 1, 2 Left turn with hands on neck.
3, 4 Quarter left jump to stride stand position with arms sideward raised.
5, 6 Quarter left jump, feet together, with trunk forward-downward bending, hands touching the toes.
7, 8 Quarter left jump to position.
(Left, 16 counts; right, 16 counts; alternate, 16 counts.)

(*j*) 1, 2 Outer lines charge inward, preparing for handstand.
Inner lines charge outward with arms straight at the sides.
3, 4 Outer lines perform handstands.
Inner lines raise arms and grasp legs of outer lines.
5, 6 Return to 1, 2 position.
7, 8 Position.
(Outer lines, 16 counts; inner lines, 16 counts; alternate, 16 counts.)

(*k*) Close order and march off field in fours; at end of field by a right or left turn into line.

2. Wand Drill.

(*a*) 1 Front horizontal.
2 Position.
(Continue for 16 counts.)

(*b*) 1 Chest horizontal.
2 Position.
(Continue for 16 counts.)

(*c*) 1 Neck horizontal.
2 Position.
(Continue for 16 counts.)

(*d*) 1 Left foot forward place, chest horizontal.
2 High horizontal.
3 Chest horizontal.
(Continue for 16 counts, alternately left and right.)

(*e*) 1 Left toe sideward touch, chest horizontal left.
2 High horizontal.
3 Chest horizontal left.
4 Position.
(Continue for 16 counts, alternately right and left.)

(*f*) 1 Neck horizontal.
2 Trunk forward bend.
3 Trunk raise.
4 Position.
(Continue for 16 counts.)

(*g*) 1 Deep knee bend, front horizontal.
2 High horizontal.
3 Front horizontal.
4 Position.
(Continue for 16 counts.)

(*h*) 1 Left leg forward lunge, chest horizontal.
2 Left ankle horizontal.
3 Chest horizontal.
4 Position.
(Continue for 16 counts, alternately left and right.)

(*i*) 1 Jump feet apart, high horizontal.
2 Ankle horizontal.
3 High horizontal.
4 Position.
(Continue for 16 counts.)

(*j*) 1 Hop, wand chest horizontal.
2 Hop, wand thigh horizontal.
(Continue for 16 counts.)

3. Dumbbell Drill.

(*a*) March on field in file. On the left form fours. Open order. All exercises are from the arms bend position.

(1) 1 Strike in front of thighs.
2 Arms bend.
(Continue for 16 counts.)

(2) 1 Arms forward stretch.
2 Arms bend.
(Continue for 16 counts.)

(3) 1 Arms upward raise.
2 Arms bend.
(Continue for 16 counts.)

(4) 1 Arm sideward stretch.
2 Arms bend.
(Continue for 16 counts.)

(5) 1 Left knee forward raise and strike under left knee.
2 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(6) 1 Left leg forward raise, striking under left thigh.
2 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(7) 1 Left leg forward oblique raise, striking under left thigh.
2 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(8) 1 Deep knee bend with arms forward.
2 Arms upward raise.
3 Arms forward.
4 Position.
(Continue for 32 counts.)

(9) 1 Charge forward on left leg and strike under left knee.
2 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(10) 1 Charge sideward and strike under knee.
2 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(11) 1 Side step left, lowering arms in front of thighs.
2 Arms forward-upward.
3 Arms forward-downward.
4 Position.
(Left, 16 counts ; right, 16 counts ; alternate, 16 counts.)

(12) 1 Quarter left jump to stride stand position.
2 Trunk forward-downward bend, striking dumb-bells in front of ankles.
3 Trunk raise with arms upward.
4 Feet together with arms bend.
(Four quarter turns left, making a complete circle ; 16 counts. Right, 16 counts.)

(*b*) Close order and march off the field.

4. INDIAN CLUB DRILL.

(*a*) March on field in file. By a left turn form fours. Open order, raising arms sidewards.

All movements are done from the arms bend position. Come to this position on the last count of each exercise.

(1) Left arm outward circles. 16 counts.
Right arm outward circles. 16 counts.
Double arm outward circles. 16 counts.

(2) Left arm inward circles. 16 counts.
Right arm inward circles. 16 counts.
Double arm inward circles. 16 counts.

(3) Left arm outward circles with outward shoulder circles. 16 counts.
Right arm outward circles with outward shoulder circles. 16 counts.
Double arm outward circles with outward shoulder circles. 16 counts.

(4) Left arm inward circles with inward shoulder circles. 16 counts.
Right arm inward circles with inward shoulder circles. 16 counts.

Double arm inward circles with inward shoulder circles. 16 counts.

(5) Double arm circles left with double outward left shoulder circles. 16 counts.

Double arm circles right with double outward right shoulder circles. 16 counts.

(6) Alternate outward circles with outward shoulder circles. 16 counts.

(7) Alternate inward circles with inward shoulder circles. 16 counts.

(*b*) Forward close order, clubs in marching position; march off field.

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CHAPTER V.

POSTURE AND REMEDIAL GYMNASTICS.

THE question of good posture is an important one in schools, because school-room environment is not conducive to holdin the body straight. In fact it is quite difficult for children to remain seated in the class-room for many hours of the day and this difficulty is often aggravated by faulty seats which soon become uncomfortable. This leads to slumping in order to assume a position which will mitigate the discomfort as much as possible. If this is continued during school life, bad postural habits will result, and this is a danger which teachers should keep in mind. Of course, many children already have poor posture before entering school and must be taught the correct ways to sit and walk.

The seriousness of poor posture cannot be ignored. It is not a harmless habit, but an important matter, as it affects health, physical efficiency, appearance and mental attitude. Much can be done by the teacher within the class-room and during the physical activities periods to prevent bad postural tendencies in the students and to eliminate conditions which induce poor posture.

The effects of poor posture on health are well-known. When the heart, lungs, liver and other organs are cramped and the normal functioning of respiration, circulation and digestion are interfered with, health is bound to become somewhat impaired. The organs of the chest and the viscera are in a position to perform their work to the best advantage only when the parts of the body are in right relation to each other. Round shoulders, the most common defect in school children, affects normal respiration. There is a lessening of the respiratory movement and of the intake of air. The influence on digestion is also bad, for round shoulders and the drooping forward of the head decrease the amount of space available for the organs of the abdominal cavity and push them downward, interfering with their normal function and placement. "As a result," says Dr. Mosher,[1] "constipation, diarrhœa, flatulence, disturbance of the circulation, nervous irritability and, most marked of

[1] Eliza M. Mosher. *The Relation of Posture to Health*, p. 98.

all, fatigue out of proportion to the effort expended, lessen the efficiency of the individual and often make life a burden." Poor posture and relaxed abdominal muscles usually go together. The abdominal wall is not surrounded by bone, and continued relaxation of the muscles which have the work of holding the viscera in place affects other parts of the body.

Physical efficiency is also limited by poor posture. When the shoulders are rounded and the head drooped forward, the upper part of the body is moved forward from the central line of gravity. To equalize the distribution of weight the lower back is bent and the abdomen extended forward, the pelvis being turned at an abnormal angle, or the knees slightly bent. Any deviation from the central line of the body interferes with efficiency in running, jumping and other fundamental body movements. The highest type of efficiency is possible only when the body parts are in proper relation to the central line.

The effect of poor posture on appearance is obvious. We admire a straight and well-rounded body, while a crooked body or one which gravity has been allowed to pull downward and out of normal shape is unpleasant to look at and gives the effect of passivity and weakness. Pride in appearance alone should be reason enough for the individual to make an attempt to assume good posture.

The psychological effects of poor posture are perhaps the most important to consider. A passive and dull mind is associated with a slumping posture and an alert mind with a straight posture. One can notice the effect by merely raising the chest and standing straight for a moment. The mind immediately becomes more alert. Poor posture may also result in timidness, lack of courage and other undesirable traits. This is because boys with postural defects often do not get an opportunity to participate in the intensive activities of youth. They frequently are in the background looking on, because they are so often outclassed by other boys that they hesitate to take part in the activities.

Causes of Poor Posture.

Because poor posture can have such detrimental effects upon the individual, it is important to know the causes of this defect so as to intelligently understand the problem.

The first cause is muscle weakness. When the muscles are flabby, due to lack of exercise, the natural tendency is to droop, to allow the abdominal muscles to relax and the viscera to extend forward. Every person should take regular exercise to prevent or eliminate this condition.

The next cause is bad postural habits due to ignorance of the correct position to assume.

Another cause is faulty desks and seats. Desks which are too high or too low compel the student to stretch or cramp his body. Seats which are too high cause pressure on the arteries of the leg, and seats which are too low cause slouching. A seat placed too far back from the desk results in excessive leaning forward, thereby cramping the chest and abdomen. School children sit at school for many hours of the day during the years while they continue their education. Because of this fact, seats and desks can be decidedly harmful unless they are properly made and adjusted to the individual.

Poor reading and writing positions also have their effects on posture. The seats and desks may be ideal, but if students continually read and write with their bodies in poor posture the results can only be harmful. This matter requires the constant attention of the teacher.

Another cause is defective eye-sight or hearing. Defective eye-sight compels the students to lean forward unduly when reading and when looking at the black-board. Defective hearing leads the individual to assume a strained position in order to hear.

If the wrong type of apparatus or free-hand exercises are done continually poor posture will result. If, for instance, the chest muscles are over-exercised and the back muscles lengthened (a combination of effects which often goes together) round shoulders will result. Teachers of physical education should understand the effects of the exercises which they are teaching for otherwise they can do great harm.

The teacher's personality can also have a bad effect upon the students. A teacher who himself is lacking in poise and has a negative attitude and a poor posture, usually has a depressing effect on the students, and leads to their slouching. A teacher must be alert and straight to exemplify good posture.

Disease and deformity are other causes. After a long illness an individual often develops a slouching habit. The head, chest and abdomen are allowed to drop downwards due to weakness. Deformities, such as club feet, flat feet, paralysis, etc., also often cause poor posture.

Too rapid growth is another common cause of poor posture, especially in adolescent boys who increase in height rapidly. Their bones grow faster than do their muscles, causing the characteristic ungainly and awkward carriage.

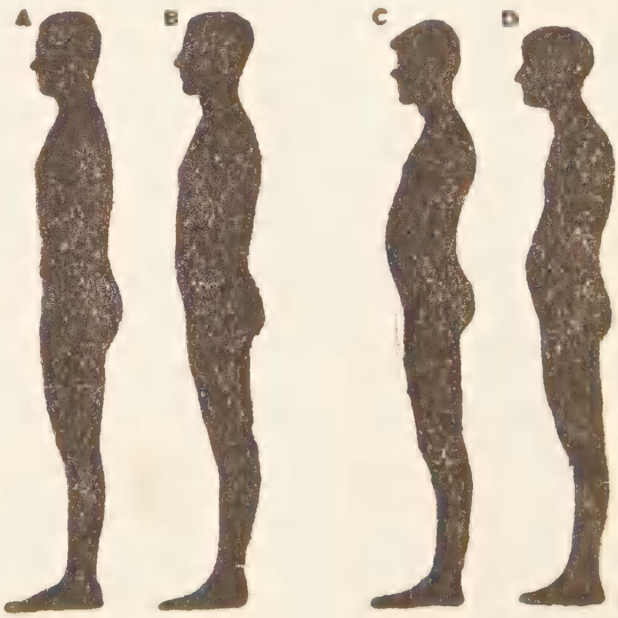
Other causes are continually carrying books or packages on one side of the body, resulting in lateral curvature of the spine, and wearing clothing too tightly around the body which interferes with normal movement of the trunk and arms and legs. Clothing should hang loosely so as not to interfere with natural movements or constrict the chest or abdomen. The tying of the dhoti too tightly around the abdomen should be discouraged.

How to Assume Correct Posture.

The chart printed below gives an excellent idea of good and bad postures.[1]

Body Mechanics.

The right way The wrong way



[1] Prepared and issued by the Department of Hygiene and Physical Education, Harvard University, Cambridge, Mass.

(A) Excellent Mechanical Use of the Body.

1. Head straight above chest, hips and feet.
2. Chest up and forward.
3. Abdomen in or flat.
4. Back, usual curves not exaggerated.

(B) Good Mechanical Use of the Body.

(Compare with Fig. A)

1. Head too far forward.
2. Chest not so well up or forward.
3. Abdomen, very little change.
4. Back, very little change.

(C) Poor Mechanical Use of the Body.

(Compare with Fig. A)

1. Head forward of chest.
2. Chest flat.
3. Abdomen relaxed and forward.
4. Back curves are exaggerated.

(D) Very Poor Mechanical Use of the Body.

(Compare with Fig. A)

1. Head still farther forward.
2. Chest still flatter and farther back.
3. Abdomen completely relaxed, "slouchy".
4. Back, all curves exaggerated to the extreme.

In a *good standing posture* the head, neck, trunk, thighs and legs are in a straight line, with the arms hanging naturally at the sides. The body weight is on both feet equally and the knees and hips are extended. The abdomen is drawn in, the chin in, head held erect and chest raised, with the body held as tall as possible without strain. The shoulders are not raised, but remain relaxed. It must be emphasized that a stiff posture is condemned, the idea being to hold the body erect without strain.

The position of the pelvis is very important as far as posture is concerned as it controls the position of the spine. The most common fault is throwing the hips back too far, thereby placing the spine in an unnatural position and causing an excessive curve in the lower back.

In the *correct sitting posture* the hips are well back and resting equally on the seat. The trunk forms a right angle to the thighs and the legs a right angle to the thighs. The feet rest flat on the floor. The trunk is comfortably erect

and the head and chest high. By learning to draw the abdomen up the idea of sitting tall from the hips be learned.

For *writing* assume the correct sitting position, lean forward from the hips and rest the forearms naturally on the desk. The sides of the paper should be parallel to the right forearm and the left hand advanced in front of the right hand, holding the paper.

For *reading* while sitting, assume the correct sitting position and lean forward from the hips with the forearms parallel and resting on the desk. Hold the book vertically so that the top and bottom of the book are an equal distance from the eyes. The distance from the eyes should be about 12 inches. The head should be straight on the spine and the shoulders straight but relaxed.

In *correct walking* the abdomen is held in and the chest up, the head resting straight on the spine. The arms swing naturally and the body is inclined forward slightly. The toes are not turned out, as is so often considered correct by unenlightened people, but are advanced straight ahead. The body is not stiff.

Posture and the Gymnastic Lesson.

Students should be taught the correct standing posture during the gymnastic lesson. They should practise until good posture becomes a habit. This involves developing a new set of neuro-muscular controls which can be done only through corrective exercises. The development should be gradual, only a small part of the lesson being used for this specific purpose.

Following are the special commands which may be used during the gymnastic lesson for this purpose:

Stand......Tall! Chin......In! Chest......Up! Abodomen ......In! Weight......Forward! Head......Up! Up! Stretch! Elbows......Back!

Some of these commands may be given when counting during the performance of an exercise, using the words in place of numbers, as follows: "Right knee forward raise and return in rhythm......Begin! One! Two! One! Two! Chin......In! One! Two! etc.

Following are a few exercises for teaching good posture:

(1) Place hands on abdomen. Press in and up, keeping shoulders relaxed. Lower arms, but hold abdomen up.

(2) Hands forward raise, palms facing the ground. Press down with hands and raise chest with shoulders relaxed. Relax arms and hold abdomen and chest up.

(3) Same as (2) with arms raised sideward and pressing outward. Relax arms and lower to sides, keeping abdomen up.

(4) Elbows sideward raise and raise chest, keeping shoulders relaxed. Lower arms and hold chest up.

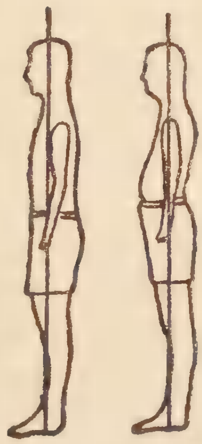
(5) Same as (2) with arms upward raised.

(6) Raise the chest and abdomen, keeping the shoulders relaxed, and lean forward slightly. This exercise will be the last stage of the training. The students should learn to control consciously the muscles of the abdominal wall and to realize the importance of holding the abdomen in. If the individual does not have control of these muscles the tendency is for gravity to pull the abdominal organs down and forward, which causes the frontal protuberance so often seen in adults. The waist circumference should never be larger than the chest circumference.

POSTURE TESTS.

Every student should be expected to know what good posture is and should pass an examination in posture. The following are some of the tests which may be used for this purpose:

The Pole Posture Test.—"Hold a pole (or other straight rod) beside the pupil so that it touches him just in front of the ear and touches the floor at the forward part of the foot. Individuals vary sligtly so that the teacher must place the pole in a vertical position as nearly as possible in contact with the ear and foot. Notice that in the erect position one line indicates the general axis of the body, while in the incorrect posture the line becomes a zigzag of different parts."[1] If the head is forward, the abdomen protruding or shoulders rounded, the defects can be noted in this test.



[1] State Board of Education, Hartford, Conn. *A Manual of Physical Education for Elementary Grades*, p. 49.

A record should be kept, placing the students in three different classes, as follows:

A—normal posture.
B—fair posture. There are slight defects.
C—poor posture.

The aim is to have each student in A class. The teacher should give special attention to the students in B and C classes and let them understand that improvement is expected by the end of the year.

Students should be tested three times a year, in July, November and March.

The Triple Posture Test.[1]—This test is more thorough than the above as it considers the posture when the pupil is standing, marching and exercising. The standing test is much the same as the above. In this the student can give his whole attention to his posture. In the marching test he is not able to give his whole attention to his posture and thus reveals whether or not he is able to walk properly and whether or not he has formed a good posture habit. The third part is an exercise test and shows whether the student is able to assume certain positions correctly and whether or not his muscles are stiff. The test is as follows:

Have the pupils stand in their best positions and standing at the side pick out those whose posture is correct and put them in a separate group A; the others form group B.

Have the pupils of group A march for 4 or 5 minutes and observe their postures while marching. Put those who fail to maintain good posture in group B.

Give the pupils who are still in group A after the marching test a few simple gymnastic exercises, including the raising of the arms above the level of the shoulders. Put in group B all those who do not maintain good posture while taking exercise.

The pupils may also be placed in A, B, C and D groups and marked accordingly. Those failing in the first test are put in group D, those failing in the second test, in group C; those failing in the third test, in group B; those passing the third test, in group A.

[1] Jessie H. Bancroft. *The Posture of the School Child*, pp. 197-203.

Remedial Gymnastics.

A knowledge of good posture and how it is attained is necessary to a teacher of physical education for general class instruction. There is a special field of physical education, called Remedial Gymnastics, which also aims to develop good posture, but which goes much further than that. This field deals with individual defects which require special attention and individual treatment, such as spinal curvature, flat feet, visceroptosis, over-weight, etc. Students with such defects should enter a special class for treatment and should be given exercises to do at home which will remedy their defects.

People with faulty posture are divided into two general classifications. In one classification are those who are stiff-jointed and who, when they have defects, are usually unable to assume correct posture, that is, it is physically impossible. They can only do so after doing corrective exercises which lengthen certain muscles and shorten others. In the other classification are loose-jointed or flexible people who, even though they have poor posture, can assume the correct position when shown how, although they require special attention until they form a new set of muscular habits which will assure good posture continually.

There are various types of exercises suitable for people in either classification, to be used according to the treatment necessary. Miss Lillian Drew[1] divides them as follows: active, assistive, resistive and passive.

Active exercises are the most common, being done without assistance. The student learns the exercise in the remedial class at school and is expected to practise at home also according to instructions.

Assistive exercises, in which the teacher assists the student to perform the movements, are used only in special cases, usually when the muscles need lengthening and the student is unable to get the greatest benefit from the exercise when performing it alone.

Resistive exercises, which are of two types, are valuable in making an exercise more strenuous. The first type is called concentric resistive, in which the muscle contracts

[1] Lillian Curtis Drew. *Individual Gymnastics*, pp. 26-27.

and overcomes resistance. The second is called eccentric resistive for in this type the resistance overcomes the muscles contraction. Both of these types are valuable in strengthening particular muscles.

In *passive* exercises the movement of the body part is done entirely by the operator who moves the limb or trunk for the subject. This would not be used in schools and is mentioned only for information, being used chiefly for cases of extreme weakness and for cases of paralysis.

There are many kinds of abnormalities which require special treatment, the most common of which are spinal.

Kyphosis.

Kyphosis is the outward curvature of the spine and is commonly called "round shoulders". It is quite common amongst school children and can be detected easily. The back is round from just below the middle of the back to the head and from one shoulder around the back to the other. Accompanying this often are winged shoulder blades ; instead of the shoulder blades being flat on the back as they are normally, the lower end protrudes, giving the appearance of two lumps on the upper back. Instead of being raised and extended forward, the chest is flat, due to the rounded back which naturally restricts the chest and interferes with its free movement. The head is often bent forward instead of being in a straight line with the trunk or spine, and in the middle of the back, in the dorsolumbar region, there is an angular projection, that is, an angle is formed from the head to the middle of the upper back and down to the middle of the lower back. The diagram gives some idea of kyphosis.



There are many causes for such a condition of the upper back. The most common is poor posture habits resulting

from a lack of knowledge of the right position to assume. The habit may be formed by continuous sitting in poor posture in the school room.

Muscular weakness is another cause, which may be due to lack of exercise or to sickness. When the muscles are weak the body tends to slump and give way to the force of gravity so that a position demanding the least amount of muscular exertion is assumed.

A cause very common amongst young people between twelve and sixteen is too rapid growth which makes them awkward and ungainly. The bones grow faster than do the muscles, which interferes with muscular co-ordination and good posture. At this time an individual can easily form bad postural habits.

Other causes are rickets and tuberculosis of the spine. In such cases the subject should be treated by a medical doctor and remedial exercises given only with the doctor's sanction.

In treating kyphosis, the aim is to strengthen and shorten the muscles of the upper back and, if necessary to stretch the muscles of the chest. The abdominal muscles should also be strengthened and the general posture of the individual improved. The most important work is to develop a new set of habits and general co-ordination of the body.

To develop a new set of habits, exercises when lying flat on the back should be given. In this position the subject's whole attention can be given to the habits to be formed. After a corrective exercise is learned while in the supine position it may be done in sitting or standing position. This applies to certain exercises only, as there are many which can be done only while standing.

Relaxation exercises are valuable in freeing the body from excessive muscular tension and developing new muscular co-ordinations. The subject relaxes completely and then assumes the correct position. At the close of the lesson he rests relaxed on the ground for a few moments. Following are exercises suitable for the treatment of kyphosis:—

(1) Lie on the back and relax completely, with the arms at the sides. Place the right hand on the abdomen. Press the right hand on the abdomen and raise the chest. Place the right hand at the side, but hold the chest up. Relax completely.

(2) Lie on the back and relax completely, with the arms at the sides. Draw the abdomen in and up and raise the chest. This is the same as (1) without the use of the hand. Relax completely. (Note: After a little practice the subject should be able to raise his chest with ease.)

(3) Lie on the back and relax completely, with arms extended sidewards. Bring the hands to the chest and press the elbows towards the ground so that the muscles of the upper back are contracted. Extend the arms sideward and relax.

(4) Lie on the back and relax completely, with arms extended sidewards. Repeat (3) and at the same time raise the chest and press the abdomen in and up. Lower the arms to the sides of the body, relaxing both the arms and shoulders but holding the chest high. Relax.

(5) Lie on the back and relax, with arms extended sidewards. Bend the wrists and press outward and sideward, at the same time raising the chest. Relax the arms and shoulders, bringing the arms to the sides, but hold the chest high. Relax.

(6) Standing position. Lean very slightly forward and relax, placing the right hand on the abdomen. Press the right hand in and up and raise the chest, but do not bend the trunk back as it should remain in the first position. It is important that the trunk is not bent backward. Lower the right hand, but hold the chest high. Relax.

(7) Do the above exercise without the assistance of the right hand.

(8) Standing position. Lean very slightly forward and raise the arms sidewards. Bring the hands to the chest and press the elbows backward so that the upper back muscles are contracted. Hold the position for a few seconds; lower the arms and relax.

(9) Standing position. Lean very slightly forward, with the arms sideward raised. Bring the hands to the chest and press the elbows backward and at the same time raise the chest and draw the abdomen in and up. Relax the arms and shoulders, bringing the arms to the sides, but continue to hold the chest up. Relax.

(10) Repeat (9) and draw the head back, keeping the chin down until the head is erect. Hold the head in this position until the final relaxation.

(11) Standing position. Bend forward from the hips, allowing the neck, upper back and arms and shoulders to relax completely so that the head and trunk droop forward. Rise slowly to the erect position, without bending backward, with the chest raised and abdomen drawn in and up and the head erect and chin in. The arms and shoulders are relaxed. Relax.

(12) Repeat (11) but raise the elbows sideward and press them backwards and hold this position for a few seconds. Relax.

(13) Stand with feet apart and arms sidewards raised. Bend forward and twist the trunk to the left, touching the left toe

with the right hand. Keep knees extended and do not alter the position of the arms. Repeated on each side.

(14) Practise hanging a bar or roman rings.

(15) Sit on a chair and grasp a bar about 4 or 5 pounds in weight at shoulder horizontal. Push the bar slowly upward until the arms are fully extended. Pull the bar down slowly and forcefully, contracting the upper back muscles.

(16) Passive chest lifting (for stiff type of round back):—Sit on a stool with feet on the floor and hands on the neck. The operator stands at the back of the subject with one foot on the chair so that his knee touches the middle of the upper back and he also grasps the subject's elbows. The operator draws the elbows back slowly, at the same time pushing on the back with his knee. This is repeated 10 to 20 times.

(17) Pelvic control exercise:—Lie on the back with legs extended. Place the left hand under the small of the back where an arch is formed and place the right hand on the abdomen. Press down with the right hand and close the arch so that the back presses on the left hand. Repeat a few times.

(18) Practise (17) without the use of the right hand.

(19) Pelvic control exercise standing:—Press the right hand over the sacrum or just above the buttocks and the left hand on the abdomen, suggesting a lifting of the abdomen and waist.

(20) Stand with the back to a wall, the feet being about six inches away from it. Raise the arms forward and upward, at the same time taking a deep breath, and try to reach up and touch the wall.

(21) Stand with arms upwards raised. Touch the hands to the neck and draw the elbows sideward and backward so that the upper back muscles are contracted.

(22) Lie on the back with legs extended and arms at the sides. Raise the arms forward and upward and at the same time raise the right leg forward. Return to position. Repeat on both sides.

(23) Lie on the back with both hands under the buttocks and legs raised forward. Bend and stretch the legs and thighs alternately, imitating the movement of the legs when riding a bicycle. Do the same with the hand on the shoulders.

(24) Practise walking and sitting in good posture.

(25) Stand with feet apart, with one hand on each side of a doorway, about shoulder height. Lean forward on the balls of the feet, bending the arms at the elbows so that the chest muscles are stretched and the back muscles are contracted. Return to position.

(26) The general posture exercises used for ordinary classes should be given.

LORDOSIS.

Lordosis is the excessive inward curvature of the spine and is often accompanied by a protruding abdomen. The head is often extended forward slightly in order to equalize

the centre of gravity, although the upper back may be in fairly good posture. The hips are thrown back, that is, the pelvic angle is increased, and the knees are hyper-extended.

One cause of lordosis is muscular weakness and the disposition to fatigue easily. In such cases the abdominal contents tend to droop, causing a protuberance or pouch, and to offset this additional weight in front the body must be bent back and the head forward.

Another cause is poor postural habits. It is often believed that the correct posture is one in which the elbows are extended backward and the trunk bent backward as shown in the following drawing, but this is not the case.



Other causes which need not be discussed here are dislocation of the hip, disease of the hip joint and rickets.

In treating lordosis exercises are used which strengthen the lower back and abdominal muscles, correct the position of the pelvis and correct the hyperextension of the knees. The following exercises are suitable:—

(1) Exercise (17) under Kyphosis for pelvic control. Much emphasis should be placed on this as the position of the pelvis is chiefly responsible for the excessive curve.

(2) The first seven exercises under Kyphosis.

(3) Lie on the back with knees bent and with one hand placed on the abdomen. Lift the abdominal wall without straining to see how high the hand can be raised. See how far the hand can be lowered by contracting the abdominal muscles.

(4) Stride sitting on a chair. Bend the trunk forward, keeping the back flat. Return to position.

(5) "Sitting on a stool with the back flat against a wall, breathing deeply and raise the arms forward-upward about three

times. Care should be taken to keep the back flat against the wall."[1]

(6) Sitting on a stool. Relax body forward until hands are touched to the floor. Raise the trunk slowly, keeping back flat.

(7) Lie on the floor with knees bent, but with the back and feet flat on the floor. Take a deep breath and raise the right leg upward. Exhale and return to position. Repeat on other side.

(8) Standing. Bend trunk forward, relax and return to position.

(9) Standing. Rise on toes, deep knee bend, rise on toes, return to position.

(10) See bicycle exercise (23) under Kyphosis.

(11) Lie on the back with knees bent and arms at the sides. Draw the knees to the chest and then extend the knees, swinging the legs over the head and raising the buttocks off the ground. Return to position.

(12) Stride sitting on a chair with a wand at shoulder horizontal. Raise the legs forward and at the same time extend the arms upward. Return to position.

(13) Walk forward with feet straight ahead and raise the knees alternately forward-upward, clasping the knee to the chest on each step. Continue slowly.

(14) General posture exercises.

(15) Practise walking in good posture.

(16) Lie on back with knees bent and relax. (To be given for rest or at the end of the lesson.)

Kypholordosis.

This is a combination of kyphosis and lordosis and is perhaps the most common type of faulty posture. In this abnormality the shoulders are rounded and the head forward, the abdomen is protruding and the lower back weak and hollow.

To correct this defect the upper back muscles must be strengthened and shortened and the general region made more flexible. The muscles of the lower back and abdomen require strengthening and the pelvis requires adjustment. The head also must be drawn back so that it rests straight on the spine.

Care must be taken in giving exercises that in the attempt to correct the kyphosis the lordosis is not increased. Practically all the exercises already listed for kyphosis and

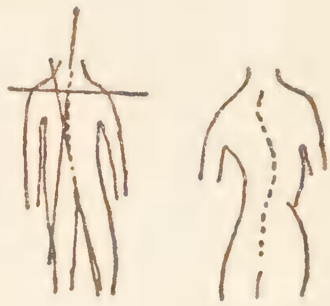
[1] From card issued by Department of Corrective Physical Education, Los Angeles, U.S.A., City School District. *Exercises for hollow back for home use.*

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lordosis are suitable for this defect. The lying exercises mentioned for kyphosis and the pelvic control exercises for lordosis should be given first.

Scoliosis.

This is a lateral curvature of the spine and is recognized by the following signs ; the shoulder is lower and the hip higher on one side of the body than on the other ; when the arms hang loosely at the sides, the angle between the arm and the body is greater on one side than on the other ; if a mark is made on the spinous process of each vertebra from the neck to the sacrum it will be found that the spine has a lateral curve.



Scoliosis is of two types: postural and structural. The first can be curved by exercise, but the second is more difficult to remedy and should not be attempted except with a medical doctor's advice. The most common causes are muscular weakness, malnutrition, rickets, spinal disease and paralysis. Exercises should not be given in case of spinal disease.

The treatment for this defect is: first, improvement of the general condition of the body ; second, equalization of the flexibility of the body (as one side of the body is more flexible than the other) ; third, general strengthening of the muscles ; and, fourth, the formation of new muscular habits to insure better co-ordination of the two sides of the body. The following exercises are most suitable:—

(1) General relaxation exercises as given for kyphosis and lordosis.

(2) Stationary running.

(3) Stretch the arms upward and bend the arms downward as

if pulling on some object, at the same time stretching the trunk upward. Repeat.

(4) Hang loosely from a bar or roman rings.

(5) Stand with arms bent. Stretch arms slowly upward and rise on toes. Return to position.

(6) Bend the trunk sideward toward convex side. Return to position.

(7) Sitting. Raise the arms on the concave side upwards and the arm on the convex side sidewards. Bend toward convex side.

(8) Sitting. Place one hand on the convexity and the other on the neck. Bend towards the convex side.

(9) Lie on the back. Raise legs alternately forward. (Later, raise both legs forward.)

(10) Exercise (3) under Lordosis.

(11) Hang on rings or bar. Raise legs sideward toward side of convexity.

(12) Bicycle exercise. See (23) under Kyphosis.

(13) Stand in the correct position, holding heavy dumb-bells. Raise arms sideward and return to position.

(14) Stand with arms upward stretched. Trunk forward-downward bend and touch toes. Rise and arms upward stretch. Continue in rhythm.

(15) Walk in correct posture.

(16) Lie on the back. Raise knees to the chest and return to position.

(17) General posture exercises.

(18) Lie on the back and rest.

In addition to spinal abnormalities there are other types of defects, as follows, which can be improved by general remedial exercises and correction of general hygiene.

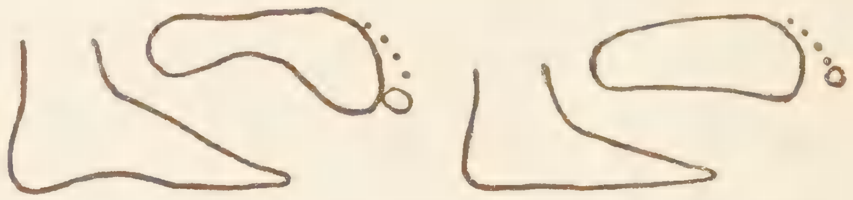
Flat Feet.

The feet are often a source of great trouble because they carry the entire weight of the body during a large part of the day and are subject to all kinds of abuse, leading in many cases to fallen arches. There are many types of foot ailments, the two most common being fallen longitudinal arch, resulting in the typical "flat foot", and fallen transverse arch.

The longitudinal arch is on the inner side of the foot. When fallen it can be detected by the following signs:—

First, the inner side of the foot is flat on the ground instead of being arched, when the weight is on it. This can be detected by noting the appearance of the foot and by the barefoot-track test. For this test the simplest method

is to moisten the bottom of the foot with water coloured with a red solution and stand on a piece of white paper so that an impression is made. Lamp black may also be used for this purpose. The impressions on the ground of a normal foot and a flat foot are as follows:—



Second, a flat-footed person wears the heels of his shoes to a greater extent on the outer side. This is contrary to the general idea that a flat-footed person wears his heels on the inner side.

Third, a flat-footed person will usually walk with the toes turned out and his gait will be stiff.

Fourth, a fallen arch is often painful.

Fifth, in a flat foot the 'tendon of Achilles' in the back of the foot is curved instead of straight, as follows:



There are numerous causes of fallen longitudinal arch. The most common is muscular weakness. When the body is weak the muscles of the feet are often unable to do their work efficiently and the arch may flatten from the slightest strain. This is possible especially after an illness.

Another cause is undue strain on the feet. This is often true of obese people whose excessive weight cannot be borne properly by the arches and of people who increase in weight rapidly.

Poorly fitting shoes may be a cause, as the foot is cramped and prevented from functioning normally when they are worn.

The habit of walking with the toes turned out instead of straight ahead may be another cause, for in this case the

weight of the body falls upon the arch instead of upon the outer side of the foot.

The arches may also fall as a result of an accident, such as falling from a height on to the feet.

The treatment for a flattened longitudinal arch includes:—

First, the adjustment of shoes, if necessary. Shoes which fit the feet should be worn.

Second, massage, *i.e.*, rubbing the muscles to take away the stiffness.

Third, and most effective, exercise, as follows:

(1) Sit in a chair with both feet flat on the floor. Move the right foot forward on the floor as far as possible, but keep the heel and sole on the floor. It will be noted that the arch raises. With the arch raised, place the foot on the left knee and note the position of the arch. Practise the same exercise with the left foot. (This exercise will raise the arch and is most important.)

(2) Sit with feet parallel on the floor. Raise the arch by attempting to raise the toes toward the heels, turning the feet inward.

(3) Sit with one ankle over the other knee so that the foot hangs free. Extend the ankle, then draw the foot inward and upward, pushing down with the toes.

(4) Standing position. Rise on the toes and then lower the heels slowly with the weight on the outer sides of the feet.

(5) Walk forward, gripping the floor strongly with the feet.

(6) Endeavour to pick up small objects, such as marbles, stones, etc., with the toes and place them in a receptacle.

(7) Walk on the toes.

(8) Balance on the foot with arms sideward raised.

(9) Form the habit of standing with the arches drawn up so that the weight is on the outer borders of the feet.

(10) Sit on the floor. Draw the feet up near the buttocks and place the bottoms of the feet together so that all parts are touching. Extend the legs forward slowly, keeping the bottoms of the feet together. (This is an excellent exercise for fallen longitudinal arches.)

Most of the above exercises are excellent for a flat transverse arch also. This arch is at the ball of the foot just behind the toes and is formed by the metatarsal bones. When fallen it is often very painful. The pain may be relieved by placing a small wad of cotton at the centre of the ball of the foot and bandaging it in place by wrapping the cloth around the foot not too tightly, but sufficiently tight to hold up the arch. If exercises are done daily, as the pain will decrease as the arch becomes strengthened, the bandage may be dispensed with.

Visceroptosis.

"Ptosis" is a sagging or falling of parts of the body. Visceroptosis is the displacement downward of the viscera, a condition in which the muscles of the abdominal walls are relaxed and the lower part of the abdomen protrudes. This condition is caused chiefly by weakness of the abdominal muscles which accompanies general muscular weakness. The abdominal muscles help to hold the viscera in place and when they are weak the tendency is for gravity to draw the abdominal contents downward.

Poor postural habits are a common cause of visceroptosis. Especially among sedentary workers, such as clerks and teachers, who assume a relaxed sitting position during most of their working hours is this abnormality found. It is not uncommon among Indian school children.

The faulty wearing of clothing may also result in this ailment. This is particularly true when the clothing is tied too tightly around the waist, interfering with circulation and normal movement of the abdomen.

Another cause is faulty diet. Malnutrition and muscular weakness are two of the possible results of poor diet. Such conditions may result in turn in general depression and a drooping of the abdominal contents.

The effects of this ailment are many. The abdominal organs in drooping down press on one another and also press abnormally upon the organs of the pelvis. The abdominal ligaments are strained, the chest is flattened, the diaphragm does not work as freely as it should, and the general posture is poor. Constipation is perhaps the most common result of this ailment.

The signs to look for in detecting Visceroptosis are constipation, pain in the abdomen, protruding lower abdomen and flat chest, drooping shoulders and general muscular flabbiness.

The treatment may be divided into three parts. First, improvement of the diet, if necessary. Plenty of water should be drunk, and plenty of fruits and vegetables and but little meat eaten. The subject should rest on his back for at least one-half hour after each meal, as the organs are nearer the normal position in this posture.

Second, adjustment of the clothing, if faulty, so that there is no constriction on the abdomen or chest. The common practice of wearing the dhoti wrapped tightly around the waist should be discontinued.

Third, after a careful medical examination, exercise, as follows: —

(1) Exercises (1) to (9) inclusive under Kyphosis in the order given. These will teach control of the abdominal muscles and should be done without straining the muscles or organs.

(2) General posture exercises.

(3) Kneel on the ground and bend the trunk forward from the hips until the chest and elbows rest on the ground with the head on the hands. This should be done twice a day, especially five minutes after retiring. Extension of the legs backward may be practised while in this position.[1]

(4) Lie on the back with knees bent and feet flat on the ground. Draw one knee towards the chest and exhale. Replace foot on the ground and inhale. Continue alternately.

(5) Lie on the back with hands under the buttocks and with legs extended upwards. Imitate the movement of the legs when riding a bicycle.

(6) Stand with feet apart. Bend the trunk forward, to the right side, backward, to the left side, and forward, 10 times.

(7) Sitting position. Twist the trunk as far as possible to the right and to the left.

(8) Lie on the back with knees bent, feet flat on the floor. Raise both knees to the chest and raise the chest, drawing the abdomen in, and exhale. Lower the legs to the original position and inhale.

(9) Standing position. Deep knee bend, raising the arms forward-upward, at the same time drawing the abdomen in and up. Return to position.

The above exercises should be practised with care at first so that the subject is not tired undully and so that there is no strain on the body parts. At the beginning of the treatment walking in the morning and evening should be indulged in, so that the general condition of the body may be improved.

UNDERWEIGHT.

The number of undernourished children in India is so large that work done in schools to cure this condition is far

[1] See Lillian Curtis Drew. *Individual Gymnastics,* Kneechest Position, pp. 138-139.

more valuable than anything else in the field of remedial work which can be done. There are five chief causes of underweight, the first being heredity. There are some people who are perfectly healthy, but who are naturally thin. However, those who come in under this classification are perhaps few in number.

The second cause is sickness or disease. Malaria, tuberculosis, venereal diseases, enteric, etc., are common causes of underweight, especially tuberculosis, which has a devastating effect upon the body.

The third and fourth (and perhaps most common) causes are poor diet and lack of exercise. It is impossible to grow normally on a diet lacking in the essential ingredients. Poverty and ignorance are the chief causes of poor diet. Insufficient exercise often leads to a lack of appetite and a run-down condition which results in underweight.

The fifth cause is worry. This is a mental habit which often engenders a poor appetite.

In treating underweight the first essential is to free the body from disease, if this is one of the causes of the condition. A thorough medical examination should be given and rigid adherence to prescription insisted upon.

Second, the diet must be improved. It should include the following: "(1) any whole cereal grain or mixture of cereal grains ; (2) plenty of milk and the products of milk-curds, buttermilk, butter, ghee ; (3) sprouted pulses ; (4) eggs, or liver, or meat, or fish, occasionally, if religion permits their use ; (5) tuber and root vegetables ; (6) abundance of green leafy vegetables ; and (7) fruit."[1]

Third, plenty of rest and sleep are important to lessen the nervous strain and to give the body a chance to do its work properly. The subject must learn how to relax at times.

Fourth, a healthy philosophy of life should be developed. The subject must not worry over trivial things and, indeed, must have the right attitude toward all the problems of life. This will be helped much by proper diet and exercise and by an honest attempt to be cheerful and to solve problems instead of simply worrying over them.

Fifth, exercise must be indulged in, unless disease is the

[1] Lieut.-Col Robert McCarrison. *Food*, p. 107.

cause of underweight, in which case nothing must be done without a medical doctor's permission. The exercise should be very moderate at first and should increase gradually in intensity as the subject shows improvement. Walking in the morning and evening is especially recommended at first and should be continued as a regular hobby. Other exercises are as follows:—

(1) Standing position. Arms bend and rise on toes. Return to position.

(2) Standing position. Arms forward-upward raise and rise on toes and inhale. Return to position and exhale.

(3) Running in place very slowly, with chest up.

(4) Exercises (1) to (5) under Kyphosis.

(5) Deep breathing.

(6) Lie on the back with knees bent, feet flat on the floor, arms at the sides. Perform various arm exercise, such as:

Arms forward raise and return.

Arms forward-upward raise and return.

Arms bend, holding dumb-bells. Extend arms to the sides and return.

(7) Sit on a chair with hands on the hips. Circle the trunk forward, to the right side, back, to the left side and forward.

(8) General posture exercises.

(9) Lie on the back with the legs extended upwards. Imitate the movements of the legs when riding a bicycle.

(10) Lie on the back. Bend the right knee to the chest and grasp it with the hands. Return to position. Continue on both sides very slowly.

(11) Rest on the back.

It is important that underweight children rest before and after meals, and refrain from indulging in strenuous activities until the general condition of the body is improved.

Overweight.

If children are slightly overweight there is no cause for concern, unless their weight interferes with their taking part in the normal activities of youth. In cases of overweight excessive fat is found in the regions of the body which are least active, such as the waist, hips, abdomen, neck, shoulders and internal organs. This extra weight causes undue strain on the organs of the body, especially the heart, as the accumulated fat interferes with their functioning. Obesity interferes with movement and the fatter the individual becomes the less prone he is to move.

The treatment for such cases is diet and exercise. There must be no eating between meals, and the sugars, starches and fats must be greatly reduced. Vegetables and fruits should be substituted for the fat-producing foods and also bulky foods may be indulged in to a greater extent, as they are relatively non-fattening. Fat-reducing drugs should be avoided, as they are usually harmful, for the only way to reduce properly is to diet and exercise.

Exercise is of vital importance, but should be indulged in with care so as not to overtax the heart. Light exercises only should be used at first and the reduction done gradually. Here again walking is excellent, as well as exercises such as the following done morning and evening:—

(1) Stand with hands on the hips. Left and right knee forward raising alternately.

(2) Standing position. Rise on the heels. Deep knee bend with arms sideward raise. Return to rise on heels and to position.

(3) Stand with hands on the hips. Trunk forward bend and return to position.

(4) Stand with hands on the hips. Trunk sideward bend and return to position.

(5) Stand with hands on the hips. Trunk forward-downward bend and return to position.

(6) Stand with hands on the hips. Bend trunk forward, to the right side, backward, to the left side, and forward, continuously.

(7) Sitting position with hands under buttocks. Raise legs sideward alternately.

(8) Sitting position with hands under buttocks. Raise the knees alternately to the chest and return.

(9) Lie on the back with legs straight. Raise both knees to the chest and return.

(10) Lie on the back with hands under the buttocks. Raise both legs forward and return to position.

These exercises should be done from six to twelve times each at first. After the subject gets used to the exercise, light running and hopping in place may be introduced.

Mouth-breathing.

There are usually a number of school children who do not breathe properly ; that is, they breathe through their mouths. In this case the dust in the air is carried directly into the lungs and can cause considerable harm. In proper

breathing the air in passing through the nose is filtered and cleaned, as the dust clings to the hairs and the cilia which grow inside the nose. Mouth-breathing also causes malformation of the teeth, most mouth-breathers having defective teeth.

The most common causes of mouth-breathing are adenoids and enlarged tonsils. In such cases, the only remedy is an operation, although breathing exercises may be beneficial in some cases. A structural defect in the nose is another cause and can only be corrected by an operation.

Mouth-breathing may also be a habit formed by an individual who is otherwise perfectly normal. In such cases the remedy is, first, learning how to breathe through the nose and, second, continual practice. When instructing an individual, have him close his mouth and breathe in through the nose and out through the nose. Emphasize the necessity for keeping the mouth closed. Also explain clearly to him the bad effects of mouth-breathing.

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CHAPTER VI.

SELF-TESTING ACTIVITIES

THERE are a large number of activities, many of which are similar to athletics, but most of which cannot be classed as athletics, which are called self-testing activities. These are classified as the Athletic type, the Tumbling type, the Pyramid type and the Apparatus type. They are good for developing muscular skill and co-ordination.

ATHLETIC TYPE.

1. Running and walking backward, sideward or forward. (For correct methods of running and walking, see Chapter VII on Athletics and Chapter V on Posture.)

With arms raised or bent in various positions.
With hands grasping various parts of the body.
With legs in various positions, such as apart, one in front of the other, stiff-legged, knees raised high, cross step, etc.
Holding stationary or swinging hand equipment, such as lathi, Indian clubs, dumb-bells, balls, in various positions.
Combinations with jumping, kicking, throwing and climbing.

2. Hopping forward, backward or sideward.

One or more hops on one foot, both feet or alternate feet.
With arms in various positions.
With legs in various positions, such as stride, one in front of the other, knee raised, leg raised forward, sideward or backward.
Holding hand equipment in various positions.
Hopping over obstacles, such as lathi sticks, Indian clubs.
Combinations of arm and leg movements, such as stride hop with arms sideward.

3. Skipping forward, backward or sideward. (Skipping forward is done as follows: Place one foot forward and make a short hop on it and immediately place the other foot forward; continue this movement alternately, with varying degrees of speed.)

With arms in various positions.
Holding equipment in various positions.
Skipping in and out between Indian clubs arranged in a line.

4. Long or high jumps forward, backward or sideward, standing or running.

With one-quarter, one-half, three-quarter or full turns left or right.

Finishing jumps with arms in various positions.

Finishing jumps with legs in various positions.

With arms and legs in various positions in the air.

Two, three or more consecutive jumps.

Jumping, holding hand or other equipment, such as Indian clubs, dumb-bells, sticks, balls.

Mark small circles on the ground in a line, square or any other order, and jump from one circle to another with eyes closed or open.

Jump, clapping hands over the head, behind the back or under the buttocks while in the air.

Hurdle over one lathi stick or more, ten yards apart.

Take one step, then a short hop on both feet and jump. Same with turns.

Take one step and jump.

Take more than one step and jump.

Mark two parallel lines eight inches apart. Practise taking a run and striking the take-off foot between these lines in preparation for the running long jump.

Hop, step and jump: stand on one foot; hop forward on the same foot, step forward on other foot and jump forward on both feet.

Stand in a small circle, jump up straight and do a complete turn in the air, landing in the circle.

Jump from one circle into another, with turnings.

Scissors high jump: run from the side and jump over a lathi stick, raising inside leg first.

Straight jump over a lathi stick; run straight towards the stick; take off from left foot and raise right straight over stick; while in the air turn left quickly and land on opposite side of stick.

Roll-over jump over a stick: run from the side; take off from inside foot and raise outside leg straight over stick; turn toward stick and raise take-off leg straight backward and upward, landing on opposite side of stick facing sidewards, on foot first raised over stick.

5. Vaulting. (One or more boys stoop over, facing sidewards with heads down.)

Stand and straddle vault over back.

Take one step, then a short hop, landing on both feet, and straddle jump.

Take more than one step and vault.

Vault with one-quarter or one-half turn right or left.

Vault and jump forward.

Vault with jump and turns.

Vault over two or more boys stooping together.

Take a series of vaults over two or more boys stooping a few yards apart.

High vault: one boy stands slightly stooping with head bent forward; run and vault over him.

High jump and vault continuously.

Long jump and vault continuously.

Back straddle vault; place hands forward on object to be vaulted; spring and, twisting the body quickly, vault over the object backwards.

6. Kicking (running or standing).

Jump upward and kick one or both legs in the air.

Jump and kick, touching with toe a stick held high.

Reverse kick: jump up and kick one leg upward and immediately reverse the position of the legs while in the air.

Kick for height: take off from one foot and kick high with the other, touching a stick held high.

Kick football for accuracy: place two Indian clubs or stones ten to twenty yards from the kicking mark and kick ball between them.

Same after dribbling the ball.

Kick for distance, using a football.

Same after dribbling the ball.

7. Rope skipping, swinging rope forwards or backwards.

Hold one end of rope in each hand and swing over head and under feet.

Same, standing or running forward.

Same, hopping forward.

8. Climbing rope activities.

Jump and grasp rope for height.

Stand sidewards; jump with one-quarter turn for height and grasp rope.

Stand with back to rope; jump with one-half turn and grasp rope.

Climb, using feet.

Climb, without using feet.

Hold rope and raise legs forward.

Hold rope and raise legs over head.

Climb with hands only from sitting position on ground.

Take one or more steps and jump for height.

Climb with legs in various positions.

Jump, grasp rope and snap forward to the ground for distance.

Climb, holding object, such as a ball, between the knees.

9. Throwing. (Use any kind of a ball.)

Throw forward, backward, over-head, or sideward.

With one arm: ordinary throw, cricket throw, under-arm throw, push from chest throw, push from shoulder throw (such as shot put), backward under legs throw or over-head throw.

With both hands: hold over head and throw forward; throw backward over head; hold at side and throw; hold over one shoulder and throw; throw backward between legs.

Throw for distance with any type of throw.

Throw for accuracy at a target or a circle marked on the ground or at Indian clubs. Throw any distance desired.

Throw basketball goals.

Throw from one person to another.

Standing or running throws.

10. Chinning, dipping, pushing and pulling.

Chin, using the high bar; hang naturally and then raise the chin to the bar by bending the arms.

Dip, using parallel bars: rest on hands between bars; dip by bending the arms and return to original position.

Dand position: touch chest to ground and return.

Tug-of-war, using a rope.

Body tug-of-war, holding each other's waists; centre men hold stick.

Stand in a circle, holding hands around a circle marked on the ground; attempt to pull each other into circle.

All stand inside a circle; attempt to push each other outside.

See Stunts under Chapter VIII on Elementary Games.

Tumbling Type.

1. Body rolls: place the hands on the ground; push forward and place back of neck on the ground and roll forward on the back, keeping it rounded, grasping the ankles and moving in a circle until the weight is on the feet again. (Make the body into a ball.)

Roll forward or backward.
One or more rolls.
Hop forward and roll.
Step, hop and roll.
Jump forward and roll.
High jump and roll.
Take a long dive forward to a roll.

Take a high dive to a roll.
Roll without the use of the arms.
Roll with the arms in various positions, such as sidewards, holding heels, ankles, knees, etc.
Stand on one leg ; roll forward and return to original position.
Roll with legs in various positions, such as apart, etc.
Roll backward and extend legs in the air to a momentary hand-stand or headstand.
Dive over objects to a roll. (Use stick or person.)

2. Cart wheels: the body moves sideward in a circle like a wheel, the arms and legs being the spokes and the trunk the axis.

3. Hand spring: a complete circle of the body is made forward without touching the head or trunk to the ground ; the hands first are placed on the ground in a forward-downward motion and the legs are thrown upward in a circle forward and the performer lands on his feet.

4. Head spring: place the hands and head on the ground with the legs straight and trunk bent ; push forward so that the body rests on the head and hands, keeping trunk bent and feet extended backwards ; then snap the legs forward, pushing with the hands and head, and land on the feet.

5. Upstart: lie on the back with hands placed just above shoulders ; raise the legs forward over the head, resting on the shoulders ; then snap the legs forward pushing with the hands so that the body is pushed into the air and one lands on his feet.

6. Hand stand: bend forward with hands on the ground, one knee bent and the other leg extended backwards ; raise the back leg and push up with bent knee so that the legs are raised upward and one is resting on his hands ; keep the back arched.

7. Forearm stand: as above, but rest forearms on the ground.

8. Head stand: as above, but the head and hands are placed on the ground so that they form a triangle.

9. Somersault: run, jump and land on both feet ; jump into the air and, curling up like a ball, make a complete circle and land on the feet without touching the hands, head or trunk to the ground.

10. Back-over-back roll: two boys stand back to back, hold each other's hands sidewards ; one boy stoops forward and the other rolls backward over his back and lands on his feet. The hands are held throughout.

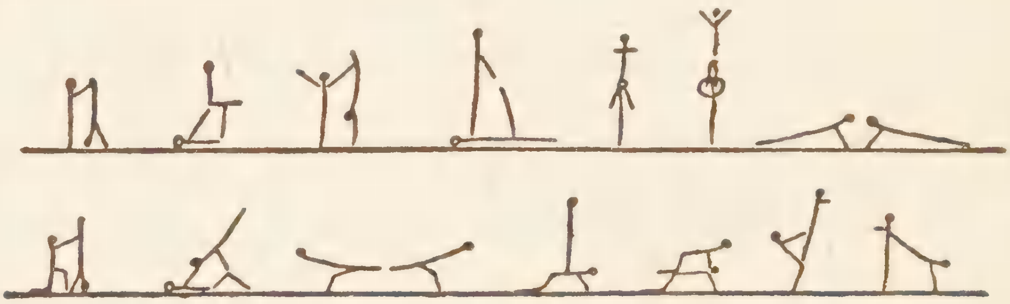
11. Shoulder stand: one boy lies on his back with knees bent and arms raised upward ; another boy places his hands on the knees of the boy lying and throws his feet upward and leans forward so that his shoulders rest on the hands of the boy lying down.

Note.—Use a sand pit covered with a durrie, if possible.

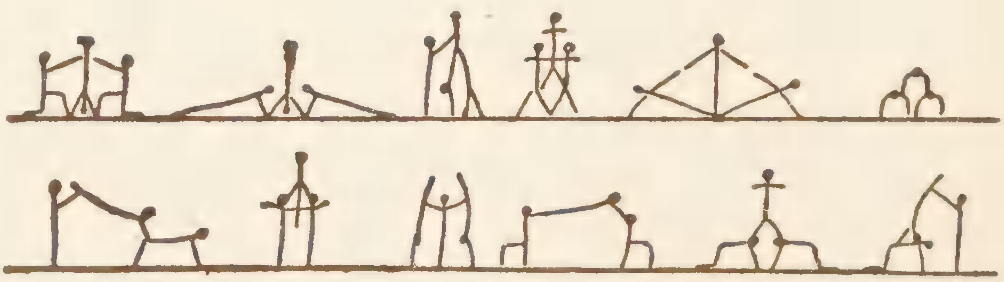
Pyramid Type.

Form pyramids as follows:—

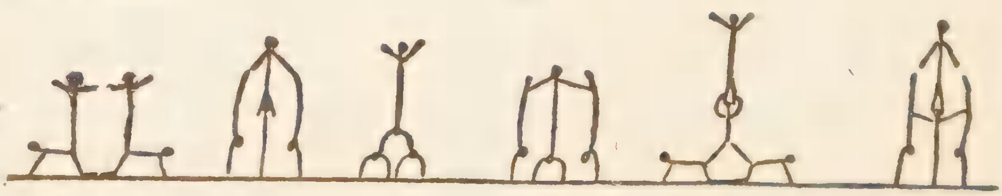
1. In twos.



2. In threes.



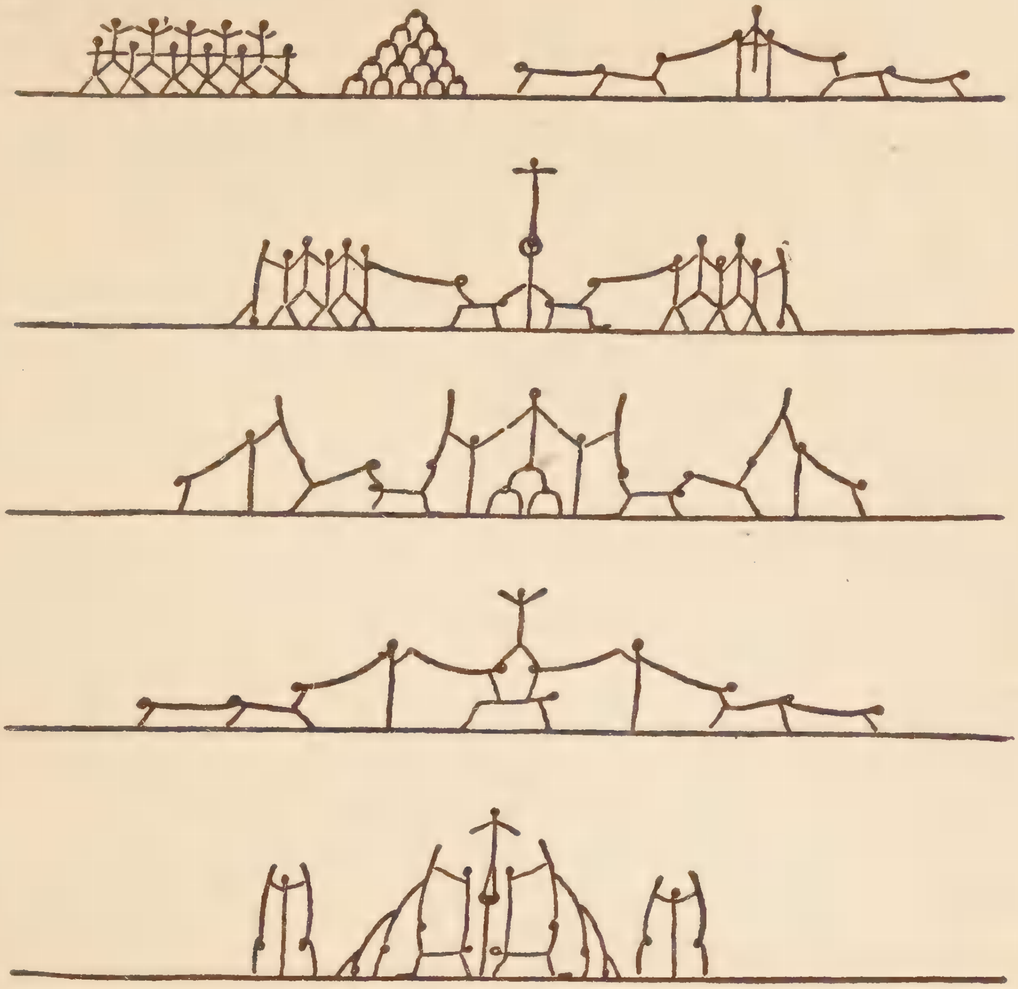
3. In fours.



4. In fives.



5. In other combinations.



Apparatus Type.

These are activities which require the use of equipment, such as parallel bars, malkhamb, high bar, low bar, horse, buck, rings, climbing rope, etc.

No attempt is made to give all the possible activities which can be performed on this equipment, but only suggestions as to how the apparatus may be used.

The exercises may be done either hygienically or for good form. Hygienically, the boys perform simple exercises in quick rotation, one after another, without paying much attention to form, each boy being kept continually active. For good form, each boy does the exercise with as much accuracy and precision as possible and the teacher corrects each boy as he performs. The hygienic exercises should be given first, in order to stimulate interest.

1. Parallel Bars.

(*a*) Positions.

Active position: body between bars, resting on hands with chest up and shoulders drawn down.

Inside cross seat, right or left: sit on inside of one bar in front of hand, with inner leg straight and sitting leg at right angle.

Outside cross seat, right or left: as above, on outside of one bar.

Cross riding seats: straddle legs over one or both bars.

Side riding seat: jump to cross seat and do a quarter turn left or right, with hands resting on forward bar.

Side seat: sit on one bar with back towards it, legs straight.

Back rest: as above, except that trunk and legs are in a straight line.

Front leaning rest: take outside cross seat and do a quarter turn toward bar, resting hands on opposite bar, with thighs resting on bar.

Bent arm active hang: assume active position with arms bent.

Forearm active hang: rest on forearms, with legs between bars.

Upper arm hang: hang between bars, resting on arm pits with arms forward on bars.

Bent arm hang, shoulders under bars.

Hang under bar with arms straight, trunk bent and toes raised between bars near the hands; knees straight.

Hang on hands with head down between bars and legs extended upwards, body and legs in line with the arms.

Shoulder balance: rest on shoulders with head down and legs extended upwards. (Do this first with knees bent.)

Bent arm hand balance: balance on hands with elbows bent, legs extended upwards.

Hand balance: as above, with arms straight and back arched.

Forearm balance: balance on forearms with legs extended upwards.

From active hang, place one thigh on bar with leg straight, the other leg extended down between bars.

(*b*) Vaults. These consist of swinging the body over one or both bars to the ground from standing on the ground, any position on the apparatus, or after a run towards the apparatus.

Standing or running vaults.—

Rear vault right or left: the back goes over the bars.

Rear vault with one-quarter, one-half or three-quarter turns right or left.

Side vault right or left: the side goes over the bar, with the body straight.

Side vault with turns.

Front vault right or left: on the backward swing the front of the body goes over the bar.

Front vault with turns. (Do these at end of bar or after running and jumping to the centre of the bar.)

Vaults from various positions on the bars.—

From inside or outside cross seats, rear vault right or left.

Same with turns.

From active hang, rear. side or front vaults, with or without turns.

From cross riding seat over one or both bars, rear vault right or left with or without turns.

From front leaning rest, rear vault right or left. Dismount backwards with or without turns.

After swinging between bars from active hang position, swing and dismount rear, side or front with or without turns.

Place left knee over right bar; swing right leg back and over the right bar and dismount.

Same as opposite side.

(*c*) Travelling on bars (moving from one end to the other).

Do a series of cross riding seats across bars: from cross riding seat lean forward on hands, lift legs and swing them between bars to another cross riding seat; do this continuously.

Do a series of inside or outside cross seats, moving forward to the opposite side each time.

From active hang position walk to other end of bars, keeping active hang position.

From active hang position swing and, on forward swing, hop forward. Do this continuously.

From active hang position hop on both hands.

Bicycle: walk forward from active hang position, moving knees up and down to imitate a bicycle.

From bent arm stand walk forward on hands.

From hand stand walk forward.

(*d*) Leg cuts at end of bar (from ground to ground).

Stand facing end of bars with hands on bars.—

Right leg circle left over right bar: jump and raise right leg over the outside of right bar to position.

Right leg circle right over right bar.

Left leg circle right over left bar.

Left leg circle left over left bar.

Right leg circle left (or right) over left bar.

Left leg circle (or left) over right bar.

Double leg circle right over right bar.

Double leg circle left over left bar.

Right circle left over right bar and left circle left over left bar. (This is done at almost the same instant.)

Same opposite.

Double cut-off: right circle right and left circle left at the same time. (This is very difficult and should be done only when some one can hold the performer.)

Note.—This group of exercises should first be done by placing the circling leg on the bar and then dismounting.

Active hang at the end of bar, facing away from bars.—

Swing and right circle right over right bar.

Swing and left circle left over left bar.

Swing and double cut-off: right circle right and left circle left at the same time.

(*e*) Other exercises.

Shoulder stand at end of bars, roll forward to ground.

Shoulder stand at centre of bars, fall over sidewards to ground.

Shoulder stand, roll forward to upper arm hang.

Shoulder stand, roll forward to cross riding seat.

Upper arm hang, swing and raise legs over head.

Upstart: upper arm hang; swing and raise legs over head; kick forward and upward and raise body to active hang position.

Upstart from shoulder stand: shoulder stand; bend feet towards head and move body forward; change position of arms and do an upstart.

All possible combinations of exercises already outlined under *a, b, c, d,* and *e*. Examples:

Travelling across bars, cut-off.

Upstart to shoulder stand.

Outside riding seat on right bar, rear vault left.

2. Low Bar (about chest height).

(*a*) Positions.

Front rest: rest on hands, facing bar with thighs leaning against bar, chest up, legs straight.

Back rest: rest on hands with back toward bar, legs straight.

Side riding seat: rest on hands, facing bar, with one leg forward between hands, thigh resting on bar and the other leg back. The legs straddle the bar.

Cross riding seat: straddle the bar, facing sidewards.

Bent arm rests.—

Front: the chest touches the bar, with elbows up.

Back: the back touches the bar, with elbows up.

Front bent arms rest with elbows extended down.

Upper arm hang: weight rests on upper arms which are raised forward.

Hang under bar with thighs bent, toes touching bar.

Hang under bar with head down, feet extended straight upwards, with back touching bar.

Same with front touching bar.

Elbow hang: arms raised and resting on elbows.

Same with arms backward.

Hands and single knee hang: place one leg between hands and hook one knee over bar.

Hands and double knee hang: place both legs between hands and hook both knees over bar.

Hands and single heel hang: place one heel on bar between hands.

Hands and double heel hang: place both heels on bar between hands.

Arch hang: place hands and front of feet on bar and arch back so that front of body is facing down.

Knee hang without the use of hands.

Body lever: from front rest lean forward so that the body rests on the elbows and is horizontal.

Hang under bar with legs forward raised.

(*b*) Vaults.

Side vault right or left.

Vault with one leg between the hands and the other extended to the side.

Rear vault right or left: a quarter turn is made and the back is towards the bar.

Squat vault: vault between the hands.

Straddle vault.

Rear vault, using only one hand.

Vault, placing one foot on bar and then jumping over.

Side or rear vault from front rest position.

(*c*) Circles.

Front rest, back circle around bar.

Front rest, front circle.

Side riding seat, back knee circle. (The body moves backward with one knee hooked over the bar.)

Side riding seat, front knee circle.

Back rest, double back knee circle

Back rest, double forward knee circle.

(*d*) Mounts.

Jump to front rest.

Side vault to back rest.

Jump to side riding seat.

Swing under bar, placing one leg between hands and one bar, and rise to side riding seat.

Same, placing knee outside hands.

Long underswing and upstart: swing under bar at arms' length with back arched; raise feet to bar on backward swing; then, kicking legs, raise body to front rest.

Bent underswing and upstart: swing under bar at arms' length with feet raised to bar: on back swing kick and raise body to front rest.

Back circle mount: raise legs in back of bar and circle to a front rest.

(*e*) Dismounts.

Front rest, dismount backward.
Same with turns.
Back rest, dismount forward.
Same with turns.

Front rest, underswing dismount: drop back, holding bar, and raise feet to the bar; swing under, extend legs forward and dismount.

Side riding seat, underswing dismount.
Underswing dismounts with turns.
Front rest, side and rear vault dismounts.
Front rest, forward circle dismount.

(*f*) Other exercises.

Front rest, right leg one-half right to side riding seat.
Same left.

Drop back upstart: front rest: drop back and swing under bar with toes to bar and return to front rest position.

Back circle with underswing dismount.
Squat vault to back rest.

Squat vault, hooking knees over bar between hands; drop back, hanging on knees.

Underswing for distance.

Walk under bar, holding it with arms at full length until reaching the other side.

3. High Bar.

(*a*) Positions. These are the same as for the low bar, with the following additions:

Active hang with reverse hand grasp.
Active hang with one hand reversed.

(*b*) Hanging and swinging exercises.

Active hang, raise knees upward alternately.
Same, raising both knees.
Active hang, legs forward raise.
Active hang, raise toes to bar.
Active hang, raise feet between arms and dismount.
Active hang, raise feet between arms and return to active hang.
Active hang, chin the bar.

Active hang, raise feet to bar and kick forward to begin a swing.

Swing forwards and backwards.
Swing and dismount forward, with or without turns.
Swing and dismount backward, with or without turns.
Swing and dismount forward for distance.
Swing and raise feet to bar.
Swing and raise feet to bar.
Swing, arch back on forward swing and, coming back, raise feet to bar.
Swing and raise feet between hands.

(*c*) Mounts.

Knee mount: raise one knee over bar between hands or outside hands ; circle other leg forward and back and rise to side riding seat.

Back circle to front rest.

Upstart: swing and, on backward swing, raise feet to bar ; kick forward-upward and down, raising body to front rest.

Back rise: raise feet between arms and draw the body upward until it swings to a back rest.

Swing and back rise.

(*d*) After mounting, any of the exercises as suggested for the low bar can be done, such as knee circles, body circles, underswing dismounts, underswing and upstart, etc.

(*e*) Dismounts. (As for low bar.)

4. The Buck.

(*a*) Positions.

Front leaning rest.
Back leaning rest.
Side riding seat. (See low bar).
Cross riding seat (facing sidewards).
Stand on buck.
Knee rest: kneel on buck with body straight.
Rest on hands: thighs touch hands and legs are apart.

Hand and elbow balance: place hands on buck, lean forward and rest trunk on elbows ; legs straight.

Hand balance.

Head and hand balance: place head and hands on buck and extend legs upward.

Rest one knee and hands on buck, extending the other leg straight back ; head up.

Sit on top.

(*b*) Vaults (standing or running).

With or without one-quarter, one-half or three-quarter turns right or left.—

Straddle vault.

Squat vault (feet between hands).

Side vault.

Rear vault: take a one-quarter turn and vault backwards over the side of the buck.

Front vault.

Back straddle vault: place hands on buck ; spring and, twisting the body quickly, vault over backwards.

Screw vault: place hands on buck ; vault with a three-quarter turn over the side of the buck with the back toward the buck. The vault is made on one hand.

Thief vault: place one leg between hands and extend the other straight to side. With one or both hands.

(*c*) Body and leg circles.

From ground or from front rest.—

Right leg one-half left circle to side riding seat ; one-half right to position.

Left leg one-half right to side riding seat ; one-half left to position.

Left leg one-half left to side riding seat ; one-half right to position.

Right leg one-half right to side riding seat ; one-half left to position.

Left leg full circle right.

Right leg full circle right.

Left leg full circle left

Right leg full circle left.

Double leg one-half circle left to back rest ; one-half circle right to position.

Same opposite.

Double leg full circle left.

Double leg full circle right.

Right one-half left, left one-half right to back rest.

Right one-half right, left one-half right to back rest.

Left one-half left, right one-half left to back rest.

(*d*) Other exercises.

Knee rest, jump forward and dismount.

Stand on buck ; jump forward with or without turns.

Jump over buck feet first, placing hands on top.

Squat vault to back rest.

Straddle vault to back rest.

Thief vault to back rest.

Hand spring.

Have one or more boys stoop in front of the buck; straddle vault over all to opposite side of buck.

Combine vaults and forward rolls.

5. The Horse.

(*a*) Positions. These are the same as for the buck.

(*b*) Vaults. The same as for the buck.

(*c*) Circles. The same as for the buck.

(*d*) Other exercises. The same as for the buck, with the following additions:

Jump between hands to back rest.

Jump to cross riding seat at end, facing inward or outward.

Front rest; side, rear, front or thief vault to ground.

Forward roll.

Jump to straddle stand at top, jump forward dismount.

Front rest; swing to cross riding seat at end, facing inward; swing body in front again and do a rear vault on opposite side.

Same, but swing body around to a back rest.

Cross riding seat at end, facing inward; walk across the horse on hands with feet straddling the horse.

Cross riding seat at end, facing inward; swing legs backward and turn to cross riding seat, facing outward.

6. Roman Rings.

(*a*) Hangs.

Ordinary hang.

Bent arm hang.

One arm hang.

Hang from elbows.

Hang from upper arm.

Ordinary hang with legs forward raised.

Ordinary hang with knees forward raised.

Ordinary hang with toes touching rings.

Circle the legs over the head between the hands and extend them down in back.

Hang, one arm bent, the other sideward raised.

Hang, one arm bent, the other forward raised.

Ordinary hang; place toes in rings and arch back so that the chest faces the ground.

Same with one foot placed in ring.

Side leaning hang with one foot in one ring and one hand holding other ring.

(*b*) Hangs while swinging.

Swing forward and backwards, touching first one foot and then the other to the ground on each swing.

On forward swing flex thighs and raise legs so that feet are near head.

Swing with legs extended straight upward, head down.

Swing ; raise feet to rings and insert toes ; arch back so that chest is facing ground.

Swing: hook one or both knees over elbows.

(*c*) Body circles.

Backward circle from ground to ground.
Forward circle from ground to ground.
Hang, backward circle to ground.
Hang, forward circle to ground.
Backward circle from ground to hang.
Forward circle from ground to hang.
Backward circle from hang to hang.
Forward circle from hang to hang.

(*d*) Cut-off dismounts. (With a quick motion the leg is placed over the arm and the hand lets go its grasp of the ring.)

Forward right arm cut with right leg.
Forward left arm cut with left leg.
Forward left arm cut with right leg.
Forward right arm cut with left leg.
Forward right arm cut with both legs.
Forward left arm cut with both legs.
Forward double cut-out with both legs.
Backward double cut-off with both legs.

(*e*) Cut-off and re-grasp.

All but the last of cut-off dismounts.

(*f*) Cut-off to ground at end of backward swing.

All of (*d*).

(*g*) Cut-off and re-grasp at end of forward or backward swings.

All of (*d*), except the last exercise.

(*h*) Other exercises.

Rest body on elbows with body horizontal.

Arms bent below the rings, body held straight and upward oblique.

Bent arm hand balance.

Upstart, stationary or at end of forward or backward swing: bend thighs so that feet are near head ; kick upward and forward, raising body to rest on hand position (cross rest) ; arms at sides.

Drop back upstart: from cross rest drop back to bent thigh position and kick up to original position.

Back circle to cross rest.

Hang and muscle up to cross rest: bend arms and stretch one sideward; draw hand raised sideward toward arm-pit with elbow up and rest weight on it; stretch the other arm sideward and draw it in with elbow up to cross rest position.

Swing in thigh bent position, feet near head; on forward swing touch toes to ground and raise immediately to bent position; swing back in bent position and repeat exercise on forward swing.

7. The Trapeze.

This is a horizontal bar attached to two ropes at about the height of Roman Rings. Many of the activities are the same as for the high bar and Roman Rings and may be done with or without swinging.

8. Climbing Rope.

See Athletic Type, 8. Climbing rope activities.

9. Horizontal Ladder.

Walk from one end to another with the legs straight or in various positions, such as knees forward raised, legs apart, etc.

Hop from one rung to another, with or without swinging.

Perform suitable high bar activities.

10. Springboard.

How to spring: run and place one foot at back end of board; jump forward to front end of board on both feet and spring forward.

In stationary spring stand at front end of board and spring forward.

Jump and spring: stand at back end of board, jump forward on both feet to front end and spring forward.

High jumps or long jumps, with or without turns.

Jumps, touching various parts of body.

Combine with tumbling activities, such as rolls, etc.

Combine with high jump activities, using high jump standard.

Place springboard at side of parallel bars and jump over bars or to various positions on bars.

Place springboard in front of buck or horse and combine with buck or horse activities.

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Chapter VII.

ATHLETICS.

Athletics are excellent activities for boys as they consist of the fundamental body movements which were partly responsible for man's present type of physical structure. Historically they are the oldest movements performed by man and are valuable in developing desirable mental qualities, such as self-confidence, courage and self-reliance, as well as in developing physical skills.

Great care should be taken when organizing athletic tournaments not to allow boys to take part in too many activities in one day and not to allow boys to take part in races which are meant for adults, such as most races over the 220 yard dash. Boys over sixteen years of age may take part in longer races if they are trained properly. See Chapter XII for details regarding the organization of an athletic tournament.

The following are the different types of athletic events:—

Running.

40, 50, 75, 100, 220, 300 yard races. These are most suitable for boys.

440, 880, one mile and two mile races. These should not be used for boys under 16 years of age. None of these races should be run without adequate training beforehand.

Five mile run, cross-country running, long distance races. These should not be used for boys in the form of competition, but jogging, with time for resting at five or ten minute intervals, is excellent. The entire school can take part in this type of activity. Cross-country running may be competitive for older boys.

Relay races. Suitable if no boy is to run more than 220 yards.

Hurdling.

75 and 220 yard low (2′ 6″) hurdles. The latter for boys over 16.

70 and 120 yard high (3′ 6″) hurdles. The latter for boys over 16.

440 yard 3′ high hurdles. Not suitable for school boys (The 3′ hurdle may be used up to 120 yards for school boys.)

Jumping.

Standing and running long jumps. Suitable for all boys.

Standing and running high jumps. Suitable for all boys.

Hop-step-and-jump, running and standing. Suitable for all boys.

Three consecutive long jumps. Suitable for all boys.

Shot Put.

8, 12 and 16 pound shots. The last should be used only for adults.

Pole Jump.

Suitable for all boys.

Javelin Throw.

Suitable for all boys.

Discus Throw.

Adult and junior sizes.

Hammer Throw.

12 to 16 pound weights. Not recommended for boys under 16.

Weight Throw.

35 and 56 pound weights. Not good for school boys.

Miscellaneous Events.

Cricket ball throw. Suitable for all boys.
Sack race. Suitable for all boys.
Three-legged race. Suitable for all boys.
Potato race. Suitable for all boys.
Tug-of-war. Suitable for boys over 14.

When athletics are used without competition the class is divided into groups of six or eight, each group having a boy leader. With several groups performing simultaneously, each boy has an opportunity to repeat the event several times. The teacher sets the exercise for the class. The leaders teach it to their groups and also keep their groups standing in line and in order. The exercise is continued until the teacher blows his whistle and then the teacher sets a different exercise. If he so desires, the teacher may set a different event for each group, each boy leader seeing that his group performs correctly.

Suitable athletic events are as follows:—

Crouching Start.

This is the best method of starting races up to the half-mile race, and is used in the Olympics and other large tournaments. It may be taught to an entire class while in line formation and also when the class is divided into squads. In the latter case one boy from each squad stands at the starting line and the teacher gives the necessary commands

to start. This is done in rotation and each start may be used in a short race to make it more interesting.

The crouching start is done as follows: (In ordinary practice the commands, "On your marks!", "Ready!", "Go!" are used. In regular tournaments a pistol shot is used instead of the command, "Go!".)

When the signal, "On your marks!" is given, place the left (or right) foot about six inches behind the starting line and the right (or left) knee on the ground opposite the instep of the left (or right) foot with the leg extended backward. The rear foot may be placed nearer the front foot if a quicker start can be made by so doing. The thumbs and first fingers are spread and placed at the starting line (not in front of it) in the most natural position. In this position the toes should be in two small holes made for the purpose as they make possible a forward push at the beginning of the race.

At the signal, "Ready!", lean forward on the hands and fore-foot, raising the other knee slightly, but keeping the buttocks down. In this position one is ready for the signal to start and is in a good position to throw his weight forward.

At the signal, "Go!", throw the weight forward from the fore-foot and take a few short, quick steps to increase speed rapidly. Rise to full height gradually.

Running.

Every boy should be taught correct form in running. The following are essential for proper running:

1. Run on the balls of the feet. Speed and ease in running are impossible if one runs on his heels.
2. Do not run stiffly. Keep relaxed.
3. Run with the feet travelling in a straight line, with the inner edges of the feet parallel. Many beginners have a tendency to turn the toes out when running.
4. Bend the body slightly forward at the waistline with the back slightly bowed.
5. Bend the elbows slightly. Do not keep them straight.
6. Raise the knees forward towards the middle of the body and keep the toes pointed.
7. Reach far out in front with the foot on each stride and

bring it down without slipping and without flexing it more than is absolutely necessary.

8. Push the body forward with the toes and, as the foot leaves the ground, bring it forward quickly for the next step.

Standing Long Jump.

This is done as follows, in one continuous movement:—

1. Toe the line.
2. Raise the arms forward-upward.
3. Swing the arms forward-downward and backward, at the same time half bending the knees.
4. Swing the arms forward and spring forward with the aim of jumping as far as possible.

Running Long Jump.

1. In approaching the take-off board it is necessary to gauge accurately the starting point for the run so that when the take-off board is reached it will be stepped upon exactly without slackening the speed or changing the pace. This is done by trying a few jumps and marking the starting point and judging the proper starting point from the results of the free jump. A mark may be made at the halfway point between the start and the take-off board for the guidance of the runner who, when he steps on the mark on the run forward, will know how he will arrive at the take-off board. The jumper should be running at maximum speed when he reaches the take-off board in order to throw the body forward with the greatest momentum. The step should not be too long as this interferes with a good spring upward and forward.

2. Immediately, as the jumping foot strikes the take-off board, all the energy of the body is used to propel the body upward and forward, the knees and arms being raised and the trunk bent forward. The height of this jump is of great importance, a man who can jump 25 feet jumping about 5 feet, according to Lowe and Porritt.[1]

3. After the maximum forward movement of the body in the air, the jumper should land without losing his balance. It is especially bad to fall backwards, as the length of the

[1] Lowe and Porritt. *Athletics*, p. 243.

jump is measured from the part of the body touching the ground nearest the take-off board.

The hitch-kick style of jump is often found useful. While in the air, the jumper performs several rapid kicks, thereby giving added momentum to the body.

Standing High Jump.

This is usually made from both feet, standing in front of the standard. The scissors kick may also be used, the jumper going over the bar sidewards, with the buttocks toward the bar.

This event may be practised by jumping over a lathi stick held at different heights.

Running High Jump.

There are many different styles of performing this jump, but the following applies to all kinds:—

1. The runner may approach the standard from any angle, in the style that comes most naturally to him. A mark should be made in front of the standard at a distance of three-quarters of the height of the cross bar as a take-off point, as most jumpers have found this the best spot from which to jump.

It is very important to take off on the correct foot and in order to do this one should find by experiment the place from which to start the run so that his jumping foot will strike the take-off point accurately.

2. When the take-off is reached a powerful spring is made, the arms are raised upwards and the legs, first one and then the other, are lifted upward quickly over the bar.

3. After the take-off the eyes are shifted to the bar and remain there until the bar is cleared.

The most common style of running high jump among amateurs is the "scissors". There are two types of scissors jump. In one the bar is approached from a 45 degree angle. The inside leg is kicked upward, followed by a kick with the other leg. As the legs clear the bar the body is turned quickly so that one lands facing the bar.

The other scissors jump is made from the side. The inside leg is first raised upward, followed by the other, but

the body is not turned as it clears the bar, the jumper thus landing with his side to the bar. The scissors jumps are the easiest, but records are rarely broken with them.

One good style is the "step-over". The jumper approaches the bar at a 45 degree angle, springs from the foot nearest the bar and raises the other, at the same time facing the bar. While going over the bar he lifts the jumping foot backward and upward and alights on the other foot.

Many jumpers find the following a good style: the runner approaches the standard from the front and, kicking forward and upward with one leg, takes off with a powerful drive on the other. He swings the kicking leg straight outward and sidewards from the hip as he goes over the bar the jumping leg being bent. As soon as the leg has cleared the bar he begins the turn. This is made toward the jumping leg by a shoulder twist, at the same time extending the leg backward and upward, which tends to carry the body over the bar.

Murphy suggests the following form as being best suited to the average man[1]:—

"We shall assume that the candidate jumps from the left foot. In this case he should run toward the bar from the right, and it is usually best to make a slight curve as the bar is approached. The jump for the bar should be made at a point from 3 to 6 feet away to suit the build and style of the individual athlete. The right leg is kicked high in the air, and at the same time the spring is made from the left foot. As the athlete rises into the air he turns the body to the left, at the same time jerking the left leg and hips high and out so that he will clear the bar at the greatest possible height."

Hop-Step-and-Jump.

Standing—

Toe the mark.

Raise one foot backward off the ground.

Jump forward on the foot toeing the mark, take a long step forward with the other foot and then jump forward on both feet.

Running—

Instead of toeing the mark, run up to it and take off on one foot, continuing as in the standing hop-step-and-jump.

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[1] Michael C. Murphy, *Athletic Training*, pp. 104-105.

Three Consecutive Long Jumps.

This event consists of three standing long jumps made in rapid succession.

Pole Vault.

The pole.—Bamboo makes the best poles, which should be very strong and from 12 to 18 feet long. It is essential that the poles be strong, because serious accidents may occur from weak poles breaking. It is a good plan to wrap the pole with adhesive tape from two feet from the lower end up to the ninth or tenth foot, also the top ten or twelve inches.

The grasp.—The pole should be carried pointed straight to the front and held horizontally, with the front end slightly raised. It should be carried close in to the hip and grasped with the thumbs up and hands about 30 inches apart, the left arm crossing the body close in and the right hand extended well to the rear.

Height of grasp.—This varies with the height of the bar. Up to nine feet the pole should be grasped by the right hand as high as the cross bar.

The take-off and stick.—The take-off is from the left foot. Just before the right foot touches the ground for the last time, the movement of sticking or placing the pole in the take-off hole should begin and be completed when the left foot strikes the ground for the take-off. The front end of the pole is dropped lightly into the take-off hole, the arms being raised from the carry position to a position almost at arm's length above and six inches in front of the head, the left hand being slipped up to the right without releasing its grasp from the pole. The eyes are kept on the take-off until the swing is begun, when they are raised to the cross bar.

The swing.—The body swings just to the right of the pole without turning or rotating until the feet have cleared the cross bar. The vaulter goes up with the back down and the body and legs straight until he is half way up the cross bar. At this point the knees and hip joint are flexed.

As soon as the feet have cleared the bar, the legs straighten

out and the body rotates quickly to the left and the head is drawn rapidly to the pole. When the hips are over the bar the rotation is nearly completed, as the vaulter is faced downwards with the body in an arched position. The rotation should continue so that when the vaulter alights his right side is to the take-off hole. The pole should not be released until the vaulter is well over the cross bar, facing downwards.

The pit.—The pit should be at least 10 × 10 feet and at least 1 foot deep. It should be filled in with sand. If sand is not available a mixture of sawdust and black dirt in the proportion of four to one should be used. It is important that the alighting pit be soft so that injuries will not result.

Practice Jump over Hurdle.

Hurdling is one of the most spectacular of athletic events. The two most common hurdle events are:—

70 yard and 120 yard high hurdles, the hurdles being 3 feet 6 inches high and 10 yards apart, the first and last hurdles 15 feet from start and finish point.

220 yard low hurdles, there being ten hurdles 2 feet 6 inches high and 20 yards apart.

The 440 yard hurdles, there being ten hurdles 3 feet high, is run occasionally, but this event is unsuitable for schools as the strain is too great for boys.

The crouching start is used in hurdling.

1. In practising on one hurdle the first thing to learn is to reach it on the proper foot, by taking the correct number of strides. In the 220 yard low hurdles there are ten or eleven strides to the first hurdle ; in the 120 yard high hurdles there are eight strides to the first hurdle. Place the hurdle at the correct distance from the starting point and practise springing and taking off from the left foot 8 feet or slightly less in front of the hurdle.

2. With great speed swing the right leg up straight and directly in front of the body, bending the trunk forward to meet the knee and reaching the left arm forward. Raise the left knee sidewards as high as the hip, the leg at a right angle to the thigh.

3. Snap the right leg down as soon as the heel has cleared the top of the hurdle and place the foot down carefully, with the toe pointed straight ahead. Keep the hips and shoulders facing the front. The left leg should not be brought forward so as to pass the hip until the hurdle has been cleared.

After practising with one hurdle until fairly proficient, add others. At first add one and then two until all are used.

In the 220 yard race there are seven strides between hurdles for tall men and nine strides for short men. In the 120 yard race the tall men take three strides between hurdles and the short men more.

Shot Put.

The shots are 8, 12 and 16 pounds in weight. The first two are suitable for use in schools. The shot is thrown from a circle 7 feet in diameter. Four feet of the circumference are covered by a toe board 4 inches high. The following should be considered in developing good form:—

1. The shot is held with the fingers and thumb—not in the palm. The stronger the hand, the further back on the fingers can the shot be held.

2. The shot is held close to or resting in the hollow formed by the shoulder and neck, the right elbow well up and back. The left arm is held straight out and slightly above shoulder level, pointing in direction of put. The right foot is at the rear of the circle and the knee bent with most of the weight on the right foot. The left leg is extended sidewards in the direction of the put. The head and shoulders are at right angles to the put. The trunk is erect and not bent forward.

3. The above position being assumed the following hop, turn and putting of the shot are made in one continuous movement:

The left leg is swung backward and forward a few times to give speed. On the final swing forward the leg is swung forcefully and a low hop is made on the right foot to the centre of the circle, the left foot landing toward the toe board. One is now in practically the same position as at

the start, the trunk being bent slightly to the right and the shot held close to the shoulder.

As soon as one lands in this position the body rotates to the left in the air, a vigorous drive from the right leg being made, the right arm being extended with all the force possible and the left arm swung back and down. The outside of the right foot strikes inside the toe board and the left leg is extended backwards.

Discus Throw.

First position and grasp.—Stand with legs spread, right foot at the back of the circle and left foot toward front of circle, the left side of the body facing the direction of the throw.

Grasp the discus with the last finger joint of the right hand, the fingers being spread. If necessary rest it against the right wrist or forearm. Place the left hand near the left shoulder with palm up, wrist bent and fingers pointing toward the left side. The discus is placed on the left hand to be steadied, with the right hand holding it as above.

Preliminary swing.—From the first position with proper grasp swing the right arm holding the discus to the right and backward to arm spread position, raising the left heel. The discus should be facing downward on this swing. Then swing forward to original position. Repeat this a few times. Practise throwing without the turn.

Swing and turn.—On the final forward swing of the right arm at the same time spring forward toward the front of the circle from the left foot, making a full turn left, alighting on the right foot and replacing the left foot toward the front of the circle in leg spread position. The body is now facing as in the original position. During this turn the right arm is spread sidewards and getting ready for the final swing forward for the throw.

Final turn and throw.—After the above swing and turn, with a continuous motion spring forward toward the front of the circle with a left about turn and throw the discus, alighting on the right foot. The discus is thrown from the index finger so that it turns in the air from left to right,

travels in the air without wobbling and with the flat side downwards. It should land on the ground on its flat side.

Javelin Throw.

The javelin must be thrown so that the point sticks in the ground when it comes to earth.

Grasp and run.—Grasp the middle of the javelin and hold it near the right of the right shoulder with point forward and slightly turned up. The back of the fist or hand is facing outwards.

Run in this position for 15 yards.

Hop.—A few feet from the toe block or take-off line take a hop with the right foot, placing the left foot forward and a little to the left, at the same time extending the right arm back and the left arm forward.

Throw and turn.—After the above, throw the javelin forward and upward immediately, springing from the left foot and landing on the right foot just back of the toe block.

Cricket Ball Throw.

The cricket ball is thrown in the same manner as the javelin.

Hammer Throw.

The hammer is thrown in two ways: without a turn and with one or more turns.

No-turn method—

Position.—Stand with the feet one and one-half feet apart, the heels being near the front of the circle and the back facing the direction of the throw.

Place the hammer head on the ground well to your right. Hold the left arm straight.

Swing and throw.—From the above position swing the hammer to the left and circle it diagonally over the head two or three times ; then hurl it backward and upward at an angle of 45 degrees.

With the turn—

Position.—Stand at back of circle, facing backwards, in the same position as described above.

Turn and throw.—Swing three times as above. On the final swing pivot on the left foot and swing the right leg in front and to the left towards the centre of the circle. Raise the left foot from the ground and swing it in a half circle backwards toward the front of the circle, at the same time gripping the ground with the right foot and throwing the hammer over the left shoulder.

An additional turn may be made in the same way before the hammer is thrown.

Potato Race.

Equipment and ground.—A container 2 feet high and 36 inches in circumference, open at the top, is placed upon the starting line for each contestant. A line is marked at right angles to the starting line in front of each container. Marks are made upon the line at two yard intervals from the starting line. A light object, not more than 4 inches in diameter, is placed upon each mark. A finish line is drawn 5 yards behind the containers.

Procedure.—One contestant stands at the starting line by each container and when the starting signal is given runs and picks up one object, runs back and places it in his container. He then goes for the second object, then the third, etc. After placing the last object in his container the contestant runs to the finish line.

Three-legged Race.

The contestants run in pairs. Each pair have their inside legs strapped together at the ankles and above the knees.

Sack-Race.

Each contestant stands inside a sack 6 feet long and 3 feet wide which is tied about his neck so that he is entirely covered except for his head.

Tug-of-War.

Efficiency in this event depends upon strength and team-work. One man should be selected to give the pulling commands. The whole team should pull as one man to a definite rhythm.

Arching is an important part of this event. If the pull is uneven or if the opposite team is gaining, the entire team lean back and arch their backs. Then the leader gives the signal to pull.

Care should be taken to see that neither team has an advantage in the way of shoes with heels or with spikes, etc. If one team is without shoes the other team should remove theirs.

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Chapter VIII.

ELEMENTARY GAMES.

Circle Games.

With One or More Boys in the Centre of the Circle.

Dodge Ball.—Position of players: The class is divided into two teams. One team forms a circle 26 feet or more in diameter, facing inwards. The other team stands inside the circle. An inflated ball (football, volley ball, basket-ball, rugby ball) is held by one of the players forming the circle at the start of the game.

Procedure.—The circle players attempt to hit any of the players within the circle with the ball. They are not allowed to step within the circle when doing this. A centre player must be hit directly with the ball and not after the ball has touched the ground. The idea of the game is to see how many players are left within the circle after five minutes of play. After five minutes or when all the players have been hit out the teams change places. The team having the largest number of players within the circle after five minutes are the winners. The time of play may be reduced or increased according to the number of players participating. If two players are hit by one throw of the ball only the first hit must leave the circle. A player within the circle is not out when hit by a circle player who steps within the circle when throwing the ball.

Variations.—1. When a player is hit he joins the circle players, the object being to see which boy remains within the circle the longest.

2. The players are out when hit with a bounced ball as well as when hit directly.

Bull in the Ring.—One player stands in the centre of the circle and attempts to get out by going over, under or breaking through the clasped hands of the players in the circle. If successful, he takes his place in the circle, the player on the right of the escaping point becoming the centre player.

Chinese Tag.—The players form a circle with one boy in the centre. The centre player runs or walks back and forth or around the inside of the circle and if he touches any player who does not have his right arm under his right knee and his right hand holding his right ear, that player becomes the centre player, the two players exchanging places.

Circle Kick Ball.—One player stands in the centre of a circle formed by the other players. A football is kicked or passed about in the circle, the centre player endeavouring to kick it out of the circle between the legs of the players in the circle. If successful he takes his place in the circle and the player who was unable to stop the ball becomes the centre player. The circle players keep the ball away from the centre player by passing it with their feet only.

Circle Pass Ball.—One player stands in the centre of a circle formed by the other players. A ball (basket-ball, volley ball or football) is passed from one player to another in the circle, the centre player endeavouring to catch it. If successful he takes his place in the circle, the boy who last threw the ball taking his place in the centre. The ball may be passed with the hands only.

Numbers, Change.—The players form a large circle with one player in the centre. The players are numbered one, two, three, etc. The player in the centre calls any two numbers and when he says, "Numbers, change," the players whose numbers have been called must change places while the centre player tries to secure one of the places. The player who is left without a place becomes the centre player.

With one Boy Standing Outside the Circle.

Swat the Runner.—The players form a circle, each player holding his hands open behind him. One player stands at the outside of the circle, holding a knotted towel or *pagri.* The player outside the circle runs around it and places the knotted towel in the hands of one of the players. Upon receiving it this player immediately begins hitting the player on his right in the circle, who immediately runs around the circle. He may be hit until he reaches his place again.

Meanwhile, the player who first had the towel has stepped into the vacant space left by the one to whom he gave the towel. This leaves one player outside the circle with the towel. He repeats the performance of the first outside player, dropping the knotted towel into the hands of one of the players and the play continues.

Kotla Chipaki.—"The players form a circle and sit facing the centre. One player has a twisted turban or cloth whip, and, while running around the circle, tries to place it close behind one player without letting him know. He continues to run around the circle until he comes to the place where he dropped the 'kotla'. If the boy behind whom the 'kotla' has been dropped has not discovered it, the first player picks it up, and may hit him while he runs once around the circle to his place. He continues to place it behind other boys till some player, by feeling behind him with his hands, finds the 'kotla'. This player then may chase the first player, hitting him, till he sits down in his vacant place. No player may look behind, and any one seen doing this may be hit with the 'kotla'."[1]

Good-Morning.—The players form a circle with one on the outside who is called "It". "It" runs around and taps another player on the back. He continues running in the same direction and the one touched runs in the opposite direction. They meet on the other side of the circle where they must stop and shake hands three times, bow and say "Good-Morning" and then run in the same direction as they were running. The one reaching the vacant space in the circle first stays there while the other player continues the game as started by "It".

Man Left Out.—Each player in the circle stands on a mark. One player runs around the circle and when he says, "Leave marks!" the boys in the circle and the boy outside the circle run around the circle until the boy who was outside the circle says, "Take marks!" when every one, including the boy who was outside the circle, tries to stand on a mark. The boy left without a mark starts the game again.

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[1] J. H. Gray, *Indian Games*, p. 17.

With the Boys in the Circle counted off in ones and twos alternately, ones forming one team and twos another.

Circle Running Relay.—A Number One player runs to the right once around the circle and a Number Two player runs to the left. Number One touches the next Number One to his right in the circle and Number Two touches the next Number Two to his left in the circle. This is continued until all the players have run around the circle. The team finishing first wins. After running around the circle and touching the next player on his team the player assumes a squatting position.

Variations of Circle Running Relay.—

Hopping on one foot instead of running.
Running backwards.
Running around the circle twice (or more times).
Jumping around the circle like a frog.
Turning in place once (or more times, as decided beforehand) before running around the circle.
Hopping on both feet.

Circle Passing Race.—Two balls are needed, one for each team. Number Ones pass to the right and Number Twos to the left. The team first getting the ball back to the first player wins.

Variations of Circle Passing Race.—

Passing around the circle two or more times, as decided beforehand.
Turning in place once before passing.
Running around the circle once before passing.
Dribbling the ball with the feet once around the circle and passing with the feet to the next boy in the team.

Circle Catch-up Passing.—A Number One player holds a ball and opposite him in the circle a Number Two player holds a ball. The balls are passed to the right around the circle, one ball by the Number One players and the other by the Number Two players. The object is to see which ball can catch up to the other ball. If a ball is dropped by a player that same player must pick it up and be in his place in the circle before passing.

Pull in the Circle.—A circle is marked on the ground and the boys stand around it with hands clasped. Number One players try to pull Number Two players into the circle and *vice versa.* If a Number One player is pulled inside the circle, even though it be only one foot, all the Number One players must run to a goal about 20 yards away, the Number Two players endeavouring to ride on their backs. The play continues in this way.

With Boys Standing in Pairs around the Circle.

Three Deep.—Pairs stand facing the centre of the circle, one boy in each pair standing in back of his partner. Two boys run around the circle, one being "It" and the other being chased. If the player being chased is touched by "It" he becomes "It" and in turn chases the first player who was "It". If, however, the player being chased stands in front of any one of the pairs in the circle the boy standing at the back of the pair becomes the one to be chased. He in turn may stand in front of another pair, the boy at the back of that pair then being chased, etc.

Variations of Three Deep.—

Hook Arm Three Deep.—The players stand side by side with arms locked, their outside hands being placed on their hips. The player being chased hooks the outside arm of one boy in a pair and the other boy becomes the one to be chased.

Facing Three Deep.—In this the pairs stand face to face. The boy being chased stops between any pair and whomsoever he faces becomes the one to be chased.

Line Games.

Parallel Line Type.

The group is divided into two or more teams, each team having five or more members. A starting line is drawn on the ground and one player from each team stands just back of this line with the rest of his team standing in file behind him.

Running Line Relay.—A line is drawn at any desired distance from the starting line and parallel to it. At the

signal, "Go!", the first boy on each team runs and touches this line, returns and touches the second boy on his team who in turn runs and returns and touches the third boy, etc., until all have run. The object is to see which team finishes first. After a player has run to the line and returned he goes to the back of his team.

Variations of Running Line Relay.—

Hopping on one leg; hopping on both legs; running backward; frog hopping; grasping ankles; baithaks hopping; turning and running; jumping over obstacles (such as a lathi stick held from two to three feet above the ground by one member of each group) or vaulting over one player stooped over.

Moving an Indian club from one circle to another and returning.

Carrying weights.

In and Out Relay.—Three or more Indian clubs or other objects are placed at equal distances between the starting line and another line drawn at any desired distance from and parallel to it. The players run or dribble a football, hockey ball or basket-ball in and out between the clubs and return.

Potato Race.—For each team mark two to eight 14″ circles in a line on the ground at two yard intervals from the starting line and one circle just behind the starting line. Place one potato (or stone, small block of wood, etc.) in every circle except the one behind the starting line. The first runner takes the potatoes one at a time and places them in the circle at the starting line. The second player takes the potatoes one at a time and returns them to the other circles. This is continued until all the players have run. The team finishing first wins.

Passing Line Relays.—The first boy in each team has a ball (or hat or other object).

Passing Under Relay.—The ball is passed under the legs of all the team to the last man, who runs to the front of the line and passes it back under the legs again. This is continued until all the players have run and the first player has the ball again at the front of the line.

Variations of Passing Under Relay.—

The last boy to receive the ball runs to a line 20 yards in front of and parallel to the starting line, returns and passes ball under legs.

Each boy turns in place two or more times at the starting line before passing the ball.

Each boy dribbles the ball from the back to the front of the line before passing it.

The first boy turns once in place and passes the ball to the second boy who turns once in place and passes it to the third boy, etc.

Passing Over Relay.—This is the same as the Passing Under Relay, except that the ball is passed back over the head. The variations are also the same.

Passing Under and Over Relay.—The first boy passes the ball under his legs to the second boy who passes it over his head to the third boy who passes it under his legs, etc.

The passing relays may be combined with all the running relays.

Horse and Rider Relay.—The first boy in each team carries the second boy to an end line drawn about 20 yards from and parallel to the starting line. The second boy returns and carries the third boy who returns and carries the fourth, etc. This is continued until all the boys have been carried to the end line.

Skin the Snake.—Each boy extends his right hand backward between his legs, grasping the left hand of the boy behind him, and his left hand forward, grasping the right hand of the boy in front. All but the last boy move backward and the last boy lies down on his back and the other boys pass over him. The grasps are not released, so that each boy lies down when his turn comes. To return to the original position the last boy to lie down merely rises and moves forward over the other boys, each boy rising and moving forward in turn.

Continuous Relay.—The first boy in each team runs around an object placed 20 yards from the starting line, returns and grasps the hand of the second boy ; these two

run around the object and return for the third boy. This is continued until all the boys run at the same time.

Over the Top Relay.—The last boy on each team straddles over the backs of his team mates who are kneeling on the ground with heads down in back of one another. After straddling all the boys he runs back and tonches the next boy, then runs forward and assumes a kneeling position at the front of the line.

Over the Stick Relay.—The first boy, carrying a stick, runs to an end line about 20 yards from and parallel to the starting line, returns and hands one end of the stick to the first boy in the line, keeping hold of the other end. With both ends of the stick held, the two players run to the back of the team, one boy on the left side and the other on the right, in such a way that the team members are compelled to jump over the stick. When they reach the end of the line the first runner remains there and the second player runs to the end line and continues the play.

Tunnel Relay. The last boy in each line crawls forward between the legs of his team mates, runs to an end line drawn about 20 yards from and parallel to the starting line, returns and touches the last boy in the line who continues the same as the first player. After touching the last boy in line the runner goes to the front of his line.

Centipede Relay.—Each boy grasps the boy in front of him around the waist. Each team runs in this position around an object placed 20 yards away and returns, the team finishing first without having released their holds being the winner.

Shuttle Line Type.

In this each team is divided into two parts and two parallel lines are drawn on the ground any desired distance apart. One-half of each team forms a file behind one line and the other half behind the opposite line, directly opposite each other. The object in the shuttle relay is usually for the two halves of each team to change places on the field by running one at a time.

Running Shuttle Relay.—The first boy runs and touches the first boy of the other half of his team. That boy runs

and touches the second boy of the other half of his team and so the play continues until the halves have changed places.

Variations of Running Shuttle Relay.—Those for running line relays, given under Parallel Line Type, can be used.

Corner Line Type.

In this one team stands at each corner of any sized square. If there are more than four teams they may stand between the corners at the sides of the square. The first boy in each team runs around the square, outside of the other teams, returns and touches the second player on his team who repeats the performance. The play continues until all have run.

Variations as for running line relays, given under Parallel Line Type, can be used for the corner relays.

Spoke Line Type.

The group is divided into teams, each team having five or more members. A small circle is formed consisting of one boy from each team. The team mates of each boy line up behind him, thus making a formation like the spokes of a wheel.

Running Spoke Relay.—The outside boy of each spoke runs around the wheel and touches the next boy in his spoke who in turn runs around the wheel and touches the next boy. This is continued until all the boys have run. After running around the wheel the players squat at the head of their team.

Variations of Running Spoke Relay.—Those for running line relays, given under Parallel Line Type, can be used.

Line Up and Squat.—The group walk around the field as if dismissed. At the blow of a whistle each team forms a spoke from the point where the teacher is standing. The first team to do this and assume a squatting position wins.

All the Passing Line Relays, together with variations, as given under Parallel Line Type, may be used for spoke relays.

Tag Games.

Ordinary Tag.—The players, except for one who is called " It ", are scattered about the field. " It " attempts to ' tag ', *i.e.,* to touch any of the other players and if he is successful the player touched becomes " It " and the play continues.

Hindu Tag.—One boy is " It " and if he touches any boy who is not kneeling with his forehead touching the ground, that boy becomes " It ".

Japanese Tag.—As above, except that the right hand must grasp the left foot in the air and the left hand must touch the right ear. Many other positions may be used for this game, such as the right hand under right knee grasping the right ear, etc.

Shadow Tag.—As Ordinary Tag, except that if any person steps on the shadow of the person being chased " It " must then chase that person.

Variation : the same as Ordinary Tag, except that "It " steps on a person's shadow instead of tagging him.

Utha Basha.—" One is chosen to be the ' Thief '. He has to run after the other players, and if he succeeds in touching any of them, while running or standing, the person touched becomes the thief. A thief cannot touch any player that sits down (squats). A player that sits down cannot get up unless touched by some other player."[1]

Broncho Tag.—The players are divided into pairs, one player riding on the other's back. One pair is " It " and tries to touch any other pair. If they are successful the pair touched becomes " It ".

Line Tag.—The players are divided into groups of three to five boys. The boys in each group clasp hands. One group is " It " and must touch any boy in any of the other groups and when successful that group becomes " It ". The boys in each group must keep their hands clasped during play.

Nondi.—The players are divided into two teams. A large circle is marked on the ground. One team stands in the

[1] J. H. Gray, *Indian Games,* p. 48.

circle while the other team stands or sits on the ground about five yards away. The team outside the circle sends one player at a time to the circle. He enters it, and hopping on one foot while in the circle, attempts to touch any of the players in the circle. Those touched must leave the circle and are out of the game. The attacker may not change feet in hopping nor touch any part of his body to the ground, nor in chasing the players inside the circle, leave it. If he does, his turn is over. When he becomes tired he returns to his team and another player is sent. In this way the play is continuous. After five minutes the teams change places. The object of the game is to see which team has the most players left in the circle after five minutes.

Maze Tag.—The group is lined up as for drill, with the arms sideward raised and touching the hands of the persons to the right and left. One person is being chased by "It" and they run between the lines formed by the group. When the whistle is blown the entire group do a right turn, touching hands as previously with the persons to the right and left. The boy being chased and "It" are not allowed to run anywhere except between the lines formed by the class. The whistle is blown frequently and each time the group do a right turn, thus changing the lines and confusing the runners. When "It" succeeds in tagging the other runner the positions are reversed, "It" being chased himself.

Ball Tag.—The play is as in Ordinary Tag except that "It" carries a football, volley ball or tennis ball and attempts to hit any player by throwing the ball at him. Any player so hit becomes "It".

Payan Panthu.—"A tennis or other soft ball is thrown up. All try to catch it, and the one who succeeds throws it at another player, who tries to dodge it. If hit, he picks it up and tries to hit another. If missed, anyone can try to secure the ball and hit any other player. The game may thus continue indefinitely. All the players will thus be running about to either get the ball or avoid being hit by it."[1]

Posture Tag.—The same as Ordinary Tag except that each boy, including "It", balances a stone on his head and if

[1] J. H. Gray, *Op. cit.*, p. 12.

the stone falls off the head of the boy being chased, he becomes "It" even though not tagged.

Miscellaneous Games.

Horse and Rider Wrestling.—The class is divided into pairs, one player being the horse and the other the rider who mounts on the back of his partner. The object is to unmount the other riders. The last rider to remain on his horse wins.

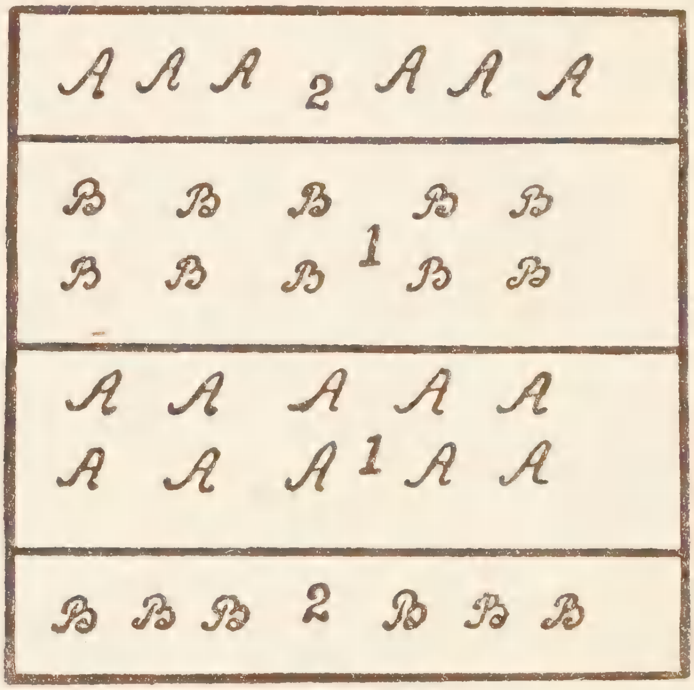
Black and White.—The players are divided into two teams and stand facing each other at the centre of the field about four or five feet apart. A goal line is marked 20 yards in back of each team. One team is called Black and the other White. The game is played with a 3-inch cube of wood which has been painted white on three of its surfaces and black on the other three surfaces, or with a flat stone marked with chalk on one side. The leader tosses the cube or stone in the air between the two teams and if a white surface is turned up when it lands on the ground the Whites run to their goal, chased by the Blacks. If any Whites are tagged they must go to the Black's side and assist them. If the Black side is turned up the Whites chase the Blacks. The game ends when one side has caught all the other side or may be ended at a time limit, when the side having the most players wins.

Pinball.—This is played on a field about 80 × 40 feet and is like basketball except that three Indian clubs are placed about one foot apart at the centre of each end of the field. There are five players on a team and the object is to knock down one or more of the opponents' clubs. The rules of basketball are followed. No player may take more than one step with the ball nor may it be kicked.

Do this ; Do that.—The players may be in any formation. The teacher makes a movement of the arms, legs or trunk and says either " Do this ", or " Do that ". When he says " Do this ", the class imitates the movement he performs. If he says, " Do that ", the class should not

imitate the movement. Those who make the movement when "Do that" is said must sit down and are out of the game. The object is to see which boy remains standing the longest.

End Ball.—The field is about 30 × 30 feet. A centre line is marked, dividing it into two areas. The group is divided into two teams which stand on opposite sides of the centre line. Each team is divided into two sections as shown in the diagram.



The object is to throw the ball over the heads of the opponent players to one's own players at the farther end of the field. A_1 throws to A_2 and if the ball is caught a goal is scored. A_2 then throws the ball back to A_1, but B_2 may enter their area and keep them from catching the ball. If B_2 secures the ball he returns to his area and throws the ball to B_3. The game is continued in this way. A_1 and B_1 must remain in their areas, but A_2 and B_2 may enter the opponents' area, but must not step out of the playing area.

Side Kick.—The players are divided into two teams. Two parallel lines are drawn upon the ground 10 feet apart and called drivers' lines. Two more lines are drawn 8 feet outside the drivers' lines and called goal lines. The entire

playing area should be 7 feet wider than a team standing side by side with hands joined can cover. Each team lines up on the goal line with hands clasped. One boy from each team enters the area between the two drivers' lines. This boy can only pass the ball to his team who in turn attempt to kick the ball under the arms of the opposite team and across their goal line. Each team must keep hands clasped and may move forward as far as the drivers' line, but not over it, nor may they go behind the goal line. The person from each team between the drivers' lines cannot leave this area. Each player on the team should be given an opportunity to play in this area.

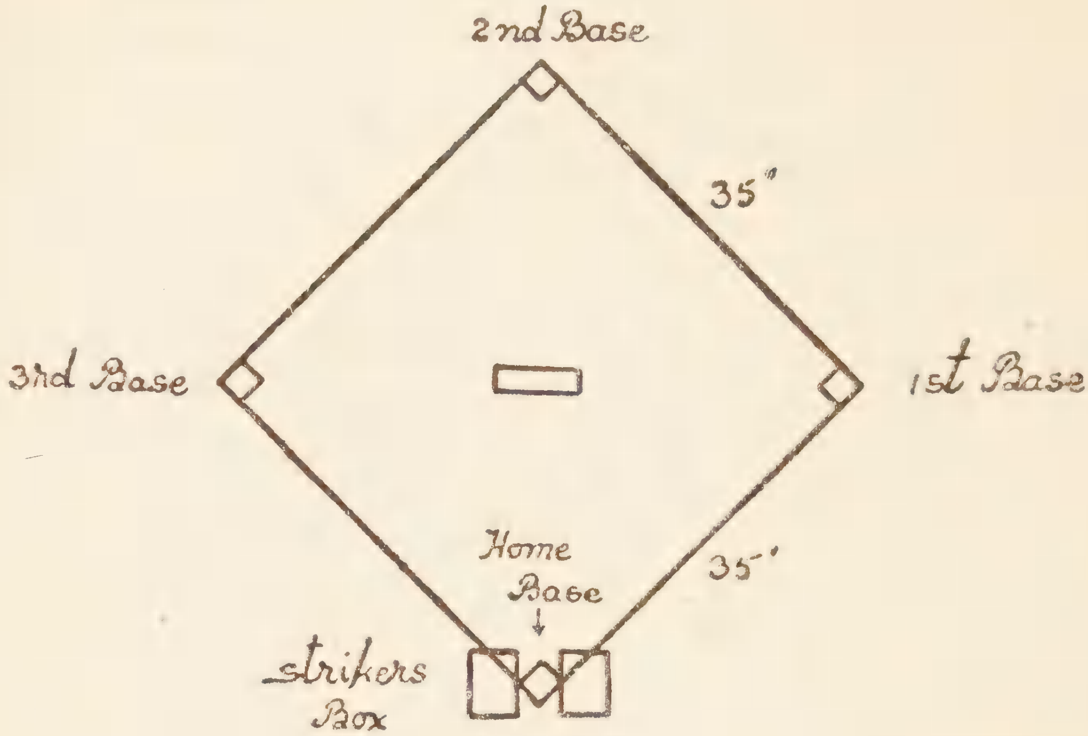
If the ball is kicked over the heads of the opposite team this is a fault and a point is scored by the opposing team. If the ball passes under the arms of the opposing team and over the goal line two points are scored by the team kicking the ball. A football is most suitable for this game.

Push Out of the Circle.—The entire group stand within a large circle. Each boy tries to push the other boys out of the circle. A player must leave the circle when any part of his body is pushed outside. The object is to see which boy remains in the circle longest.

Variation : The class is divided into teams and both teams stand within the circle. The object is to see which team has the most players within the circle after a few minutes of play.

Link Chase.—Two players are " It " and hold hands. The other players are scattered as in a tag game. The " It " players, holding hands, attempt to tag the other players. The players tagged take their places between the two " It " players, all still holding hands. In this way the chain grows larger and larger but only the two " It " players may tag any one. The players not tagged may attempt to break the chain if pressed too closely. If successful those forming the chain must run to a base or other designated spot to unite again, the players not tagged jumping on their backs while they are doing this. The last two players caught begin the game anew.

Rounders.—Any light ball such as a volley ball, football or tennis ball may be used. The field is laid out as follows:



Boards one foot square, sacks filled with sand, a one-foot square marked on the ground or flat stones will do for bases.

The group is divided into two equal sides, one group being fielders and the other batters. The fielders are located as follows: one pitcher or bowler, one catcher (as wicket keeper in cricket), one man at each base, one man between each base, and the other players around the field as in cricket.

The batter stands by Home Base. The pitcher throws the ball underhand from the pitcher's line past the batter who strikes the ball with his open hand or fist and runs to first base. He runs on to the second and third and back to Home Base without stopping if he can do so without being hit, but if forced to stop at first, second or third base he must stay there until the next batter's hit gives him a chance to run on. If he is able to touch all the bases on one hit his team is credited with 2 points. If he is compelled to stop on a base for safety and later runs to Home Base without being hit his team scores 1 point.

" When the pitcher pitches the ball it must travel over Home Base above height of knee and below height of

shoulder. Any ball wide of this is a fault. Three faults will give a batter the right to walk to first base.

"All players on the batting side must step in as batters and keep their order of batting throughout the game."[1]

When a batter is out he does not leave the game, but bats again when his turn comes, until his side is out.

No two base runners may occupy one base at the same time. The first runner must run on to the next base, even though it means that he is sure to be hit out.

A player is out:

If he strikes the ball and it is caught in the air by a fielder before it touches the ground. This counts 2 outs.

If, after batting the ball, he is unable to reach first base before a baseman or fielder gets the ball and touches first base. This counts 1 out.

If he is hit with a ball when running between any two bases. This counts 1 out.

If he passes by the base runner ahead of him when running between bases. This counts 1 out.

If, while running between bases, a hit ball is caught before it touches the ground and he cannot get back to the base just left without being hit by the ball or before the ball is received by the player guarding that base. This counts 1 out.

Five outs put the side out and the fielders and batters change places. When both sides have batted, one inning is completed. A game may last from 3 to 9 innings. The side scoring the largest number of points after all the innings have been played is the winner. The teams should decide before the game how many innings are to be played.

Kick Rounders.—This is a variation of Rounders in which the ball is kicked instead of batted with the hand. A football may be used instead of a tennis ball, if desired.

Scrimmage Ball.—The field is marked about 50 yards long and 40 yards wide. Goal posts 10 feet wide and 6 feet high, or stones 10 feet apart on the ground, are placed at each

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[1] Jack W. Houghton, *A Book of Games*, p. 78.

end of the field. A stuffed football is used. Any number of boys may play. The group is divided into two teams of equal ability, half of each team being backs and the other half forwards.

The game is started by placing the ball in the centre of the field with the players behind their own end lines. On a given signal the forwards of each team rush forward, the backs remaining near their own end lines. The forwards attempt to drive the ball along the ground, using only one hand at a time, across the opponents' end line or through the opponents' goal.

It is a foul to: (*a*) hit the ball with two hands ; (*b*) lift the ball ; (*c*) hit the ball to above shoulder height ; (*d*) kick the ball ; (*e*) tackle or hold an opponent. Penalty in each case is a free hit to the opponents from the spot where the foul was made.

Points : 1 point for driving ball over opponents' end line. 3 points for driving ball through opponents' goal.

Football Cricket.—" Two wickets are erected 20 yards apart. These may be cricket wickets or, failing these, may be chairs, kerosene tins, boxes or boulders. A football is the only other equipment. This game is played just like ordinary cricket, except that the batters, instead of having a cricket bat to strike the ball, must use their feet or any part of their body except their hands. Rules :—

" 1. Two batsmen, one at each wicket, step in to play. The remaining batsmen sit on one side until they in turn are called upon to ' go in '. The fielders set themselves out anywhere around the wickets, under the captain's direction.

" 2. A bowler is put on at one end and he must bowl six consecutive balls, when ' over ' is called and a bowler then starts from the other end. Bowlers may be changed after but not during overs.

" 3. The batsman, when the ball is bowled to him, attempts to kick or knock the ball, and if he does this he and his partner run to the opposite wicket, returning two, three or four times if safe. Each run down the wicket scores a run or point.

" 4. Outs: A batsman may be brought out in the following ways :—

" (*a*) By being bowled out, that is when the bowler hits wickets with the ball when bowling.

" (*b*) By being caught out. If the ball is kicked or should strike any part of the batter's body and from that is caught, he is out.

"(*c*) Hand before wicket. If the batter should strike the ball with his hand, or defend his wicket with his hand he is out.

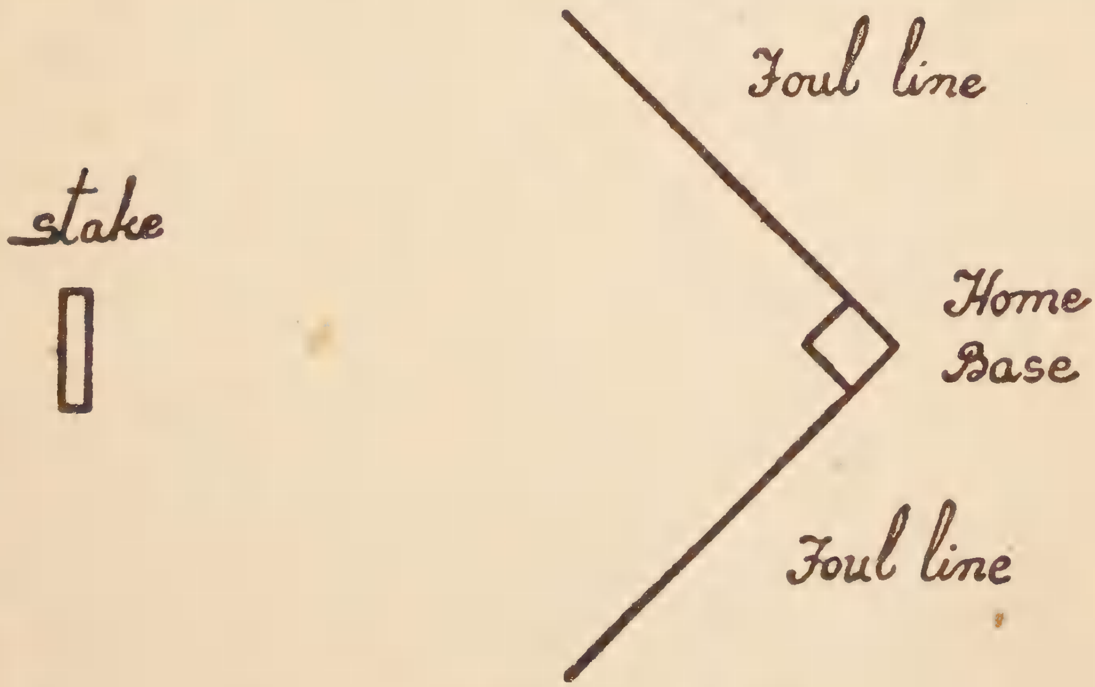
"(*d*) Run out. If either batsman should have his wicket hit whilst he is making a run (before he gets to the wicket—there are no creases) he is out.

"*Note.*—A batsman cannot be stumped out.

"5. The last two men of a batting side come out togethe and this constitutes a 'side out' when both teams change places."[1]

Bat Ball.—At one end of the playground make a Home Base which may be a flat stone or a one-foot square marked on the ground. Drive a stake 40 feet in front of the base. Mark two foul lines, forming a right angle to the Home Base, as shown in the diagram.

The players are divided into two teams, one being stationed in the field and the other being batters. The batters, playing one at a time, toss a football or volley ball into the air and hit it with the open hand or fist. If the ball lands fair, inside the foul lines, the batter endeavours to run around the stake and back to Home Base without being hit by the ball. If successful a point is scored by his team. However, he is



out if any player in the field hits him with the ball before he returns to Home Base. No fielder may run with the ball,

[1] Jack W. Houghton, *A. Book of Games*, pp. 79-80.

although he may pass it to a team mate. A player is also out if the ball is caught before it touches the ground after being batted by him. When three players have been put out the teams change places. The team wins that has scored the most runs after each team has had an equal number of turns at bat. Should the game end in a tie score the game is continued, each team batting in turn until the tie is broken.

Prisoner's Base.—The playground is divided into halves by a line. A ' prison ' 10 × 10 feet is marked at the rear left corner of each half. The players are divided into two equal teams, each occupying one-half of the playground. The members of both teams venture as far as possible into their opponents' territory. If a player is caught before he can return he is placed in the prison where he must remain until one of his own side reaches the prison without being tagged. Only one player in the prison may be released at a time and both may be tagged while returning to their own territory. The team wins which has put all of its opponents into prison or which has made the most prisoners during the playing period.

Newcomb.—The players are divided into two teams of as equal ability as possible. Numbers may be equal or not. The playing space may be a volley ball court or any smaller space with definite boundaries. A rope, tennis net or volley ball net is stretched across the middle of the court at a height of 6 to 8 feet. A volley ball or football or even a tennis ball may be used. The teams stand on opposite sides of the net, one side having the ball. An umpire, score keeper and timer are selected.

When the umpire calls " play ", one player of the side having the ball throws it over the net with the object of making it hit the ground on the opponents' side of the court. The opponents try to catch it before it hits the ground and throw it back. If the ball hits the ground in the opponents' territory, it is a score for the side throwing. Each team has a captain who should station the players about the court so as to leave no part unprotected.

It is a foul to hit the rope, to throw the ball under the rope or to throw it outside the opponents' court in any direction. A ball thrown outside the court is a foul only if the opponents do not touch it before it hits the ground. A

foul gives a score to the other side. When time is called for the first half, the players change sides and the ball is given to the side that did not have the first throw in the first half. The side having the largest score at the end of the second half wins the game.

Slap Jack.—The players stand in a circle with one in the centre. Those in the circle bend their elbows and extend their hands in front with the palms upward. The object of the player in the centre is to slap the hand or hands of any player in the circle while they are thus extended. The circle players may bend their arms down to avoid being slapped, but the hands cannot be held down for more than an instant.

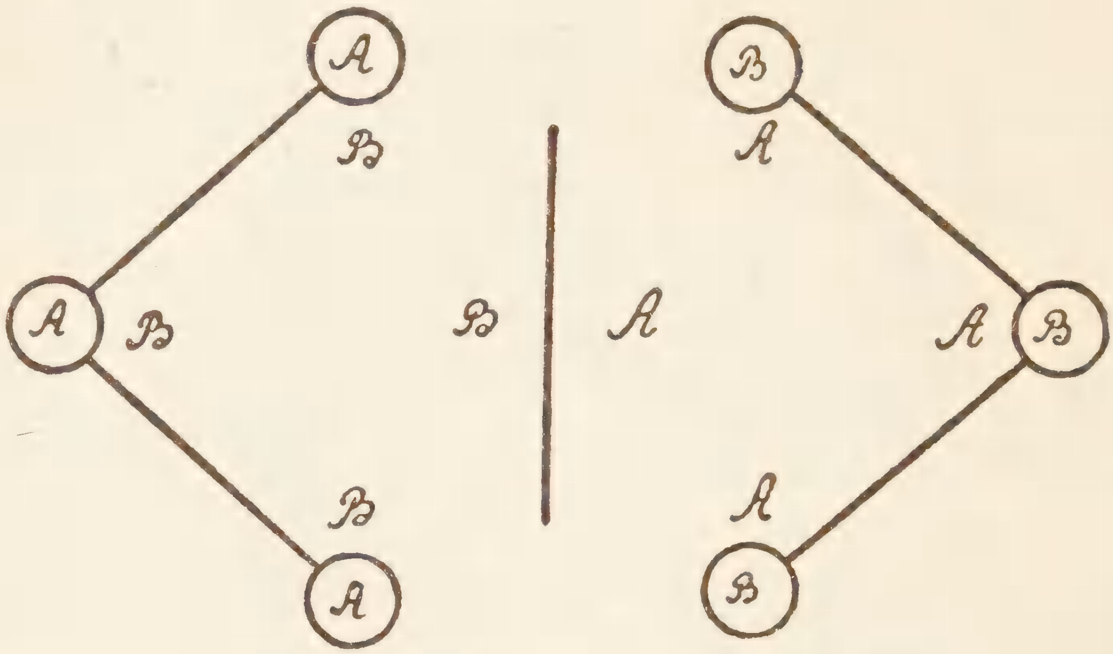
The centre player should dodge forward and back quickly and strike the hands unexpectedly, thus adding much enjoyment to the game.

Poison.—A circle is marked on the ground considerably smaller than an outer circle formed by the players, clasping hands. Each player tries, by pulling or pushing, to induce the others to step within the circle, but endeavours to keep out of it himself. Any one who touches the ground within the circle, if only with one foot, is said to be poisoned. As soon as this happens, the player or players so poisoned become catchers ; the other players shout, " Poisoned ", and at once break the circle and run for safety which consists in touching wood. The merest chip will answer, but growing things will not count as wood. Any one caught by the ones " poisoned " before reaching safety or in changing places afterwards, joins the catchers, and when all have been caught the ring is once more formed.

Master of the Ring.—A circle is drawn on the ground. The players stand shoulder to shoulder inside the circle with arms folded either on the chest or behind the back. The play starts on a signal and consists in trying to push one's neighbour out of the circle with the shoulders. Any player overstepping the line drawn on the ground drops out of the game. Any player who unfolds his arms or falls down is also out of the game. The master of the ring is he who in the end vanquishes all of the others.

Captain Ball.—Two triangles, the sides of which are 15 to 20 feet long, are drawn on the ground with the two bases

opposite each other and 25 to 30 feet apart. A circle, 2 to 5 feet in diameter, is drawn at each point of the triangles as shown in the diagram.



The players are divided into two teams, each team consisting of three basemen, three guards and one centre player. The basemen stand in the circles and at the beginning of the game one guard stands besides each circle of the opposing team. Each guard is responsible for one particular circle, but may move about freely between the circles during the game. The centre player plays as a guard during the game, but is responsible for no particular circle. The baseman who is in the circle farthest away from the centre of the playing area is called the Captain.

The leader tosses up a ball between the two centre players in the middle of the playing area, both players endeavouring to catch it. The one who is successful tries to throw it to one of his basemen who in turn tries to throw it to his Captain. Each time a captain catches the ball from one of his basemen his team scores 1 point. He then puts the ball back into play basemen who in turn tries to throw it to his basemen his team scores 1 point. He then puts the ball back into play by throwing it to one of his basemen The guard tries to prevent the basemen from catching the ball. When a guard succeeds in getting the ball he throws it to one of his fellow-guards or to one of his own basemen.

It is a foul:

For a baseman to place more than one foot outside his circle.

For a guard to touch a baseman or a circle.

For a player to kick the ball, to run with it, to snatch or knock it from another player's hands, to bounce it more than 3 times in succession or to hold it longer than 3 seconds. The penalty in each case is that an opposing baseman is allowed a free throw to his captain, the only player allowed to interfere being the captain's guard.

Progressive Dodge Ball.—A rectangle 90 feet × 30 feet is divided into 3 squares. The group is divided into 3 equal teams and the game is played in 3 innings, one team playing in the centre area during each inning so that when the game is finished all the teams have played once in the centre area. The centre team plays the two other teams each inning, but the score of each team is kept separately. Each inning lasts five minutes.

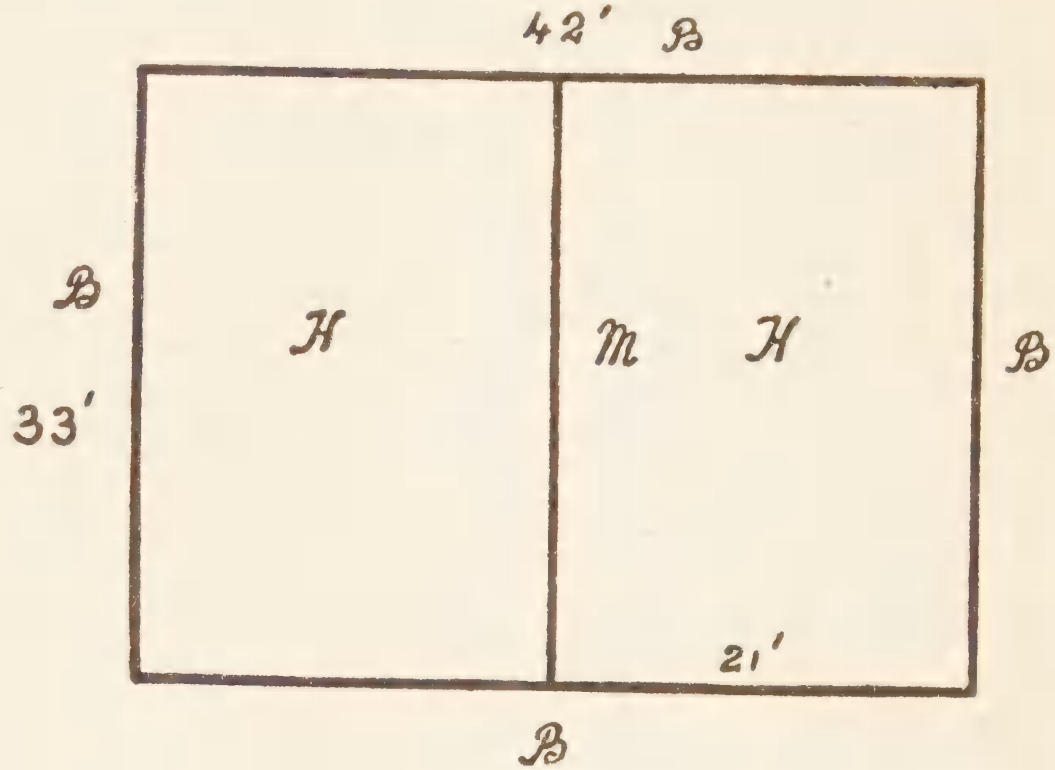
The inning starts with the team in the centre area grouped in the centre of the square, while the opposing teams are lined up on the line nearest the centre area. The ball is tossed to the centre players and the game begins. The object is to strike any opposing player with the ball before it touches the ground. If successful the player hit is out. If the ball strikes the ground any player may pick it up. After a player on any team is hit by the ball it is tossed to the centre again and the play continues.

After each inning the number of players hit out on each team is recorded. After 3 innings the team having the smallest number of players hit out wins.

Double Dodge Ball.—This game is played by two opposing teams in a 3-court field as in Progressive Dodge Ball. One team plays in the centre area and the opposing team is divided into two groups, each playing in an end court. The teams must be of equal numbers.

The game is played in two halves of ten minutes or less each. At the end of the first half the teams change places. The rules are the same as in Progressive Dodge Ball, the main difference being that only two teams participate:—

Chedugudu.—" General:—1. The ground shall be 14 yards by 11 yards and it shall be of the following plan and measurements.



1. B. boundary lines or bounds.
2. M. the march line or 'March', 11 yards long.
3. H.H. the homes of the two teams.

" 2. The mid-line or 'March' dividing the homes of the 2 sides shall be distinctly drawn and shall not be more than 6 inches broad.

" 3. There shall be nine players on each side.

" 4. Each side shall alternately send a raider into the home of the other side; but when a lot has been allowed, the same raider or another from his side shall act as a raider.

" 5. Not more than one player can be put out in the course of a raid. The raider that puts out shall gain one mark to his side.

" *Definitions* :—

" 6. The repeated sounding aloud of one or more approved syllables like Gudu Gudu within the course of one respiration shall be called a 'cant'.

" 7. One who goes from his home into the home of the opponent party with the cant in order to put one of his opponents shall be called a raider. Every player of the other party acting against the raider shall be called an Anti-raider or Anti.

"8. A raider is said to reach home when he touches any part of his home.

"9. By 'touch' is meant contact by and with any part of the body, clothing or any other of personal belongings; and by a struggle is meant the holding of the raider by one or more antis to prevent the former reaching home with cant.

"10. By an 'intruder' is meant (*a*) player found on the march or in the opponent's home when a raid is on, (*b*) a raider who has left the march, but is without cant, or a raider who has lost his first cant before reaching home.

"*Exception* :—No anti in a struggling group will be deemed an intruder while the struggle is on.

"11. Each of two or more persons starting and acting as raiders will be liable to be dealt with as an intruder until only one is left to act as such.

"*Score* :—

"12. If a raider reaches home with cant after touching an anti he (the raider) shall gain one point for his party.

"13. If a raider who has been touched or held by one or more of the antis does not reach his home with cant the raider shall give one point to the other party.

"14. Any player who goes out of bounds shall be considered out and shall forfeit one mark to the other party. If in a struggle the raider or the opponents move out of bounds wilfully the one that goes out of bounds first shall give to the other party one mark. But in a struggle the player or players who are thrown out of bounds by the opponent or opponents shall gain one mark.

"15. An intruder if he is touched by any one of his opponents with cant shall forfeit one mark to his opponents.

"16. A raider may be put out by an anti taking cant when there is one or more intruders in the raiding field. The party that puts him out shall gain one point.

"17. When a raider is lifted off the ground by an anti, in whichever home, the anti or the raider gives to the other party one mark according as the raider reaches home with cant or not (*Vide* Rules 12 and 13).

"18. If a raider is warned against any danger by one of his own side the antis score one point.

"19. A raider is not to be held by any other part of his body than his trunk or limbs and the one who violates this rule shall increase the score of the opponents by one mark.

"*Fouls* :—

"20. It is foul to attempt to stifle a raider's cant by shutting his mouth, throttling or any other way, and the one who commits the foul shall immediately be sent out of the field by the referee and if the Executive Committee of the Association deems it fit he may be excluded also from the game or games to be played.

"21. It is foul to do any action with a view to hurting any

player and the person responsible shall be excluded from the game in progress as well as the game or games to be played.

"22. It is also foul to do any action with a view to unduly prolonging the game, and the player or players responsible for this shall be sent out of the field during the course of the game in progress.

"*Matches* :—

"23. The side that has won the toss shall have the right to choose its home ; and the other side shall send the raider.

"24. Every match shall be played for one hour with a recess of 5 minutes between the first half an hour and the second half an hour.

"25. When the match is resumed after half time, the sides shall change homes and the raider shall come from side which did not send the first raider, at the outset of the game.

"26. The personnel of a team shall not be changed in the course of a match.

"27. The party that scores the greatest number of marks at the end of the time shall be declared the winner in the contest.

"28. For each game there shall be a Referee, a Scorer and two line Umpires.

"29. The Referee's decision on the field shall be final."[1]

Stunts and Miscellaneous Activities.

Wand Wrestling.—Two boys sit down facing each other with knees bent and the balls of the feet placed against the balls of the opponent's feet. They hold a wand or lathi stick between them. The object is for each to pull the other off the ground. This may also be done by holding hands and pulling.

Hand Wrestling.—The players are divided into two teams. A line is drawn on the ground and the teams stand on opposite sides of the line, facing each other. The object is to pull the players on the opposing team over to one's own side of the line. When once pulled over the line the player is out of the game. The team having pulled the largest number of opponents over after a few minutes wins.

Variation.—When a player is pulled across the line he assists the team to whose side he is pulled.

Indian Wrestling.—Two boys lie side by side on their backs, with heads in opposite directions, their arms securely

[1] H. C. Buck, *Rules of Games and Sports*, pp. 220-227.

locked. On the signal to start each raises the leg nearest the opponent three times, locking it with the opponent's leg on the third time and attempting to pull him over.

Toe Wrestling.—The opponents are seated on the ground facing each other with knees bent. A stick is placed in under the knees of each player who clasps his hands over his knees with elbows under the stick. The object is to get the toes under those of the opponent and roll him over backwards. If either wrestler breaks his hand clasp about the knees it constitutes a victory for the opponent.

Follow the Leader.—The class follow the leader about the field in single file and imitate whatever he may do, such as raise arms sidewards, squat, walk across parallel bars, hang on the high bar, do a cart wheel, grasp ankles, walk on hands and feet, etc.

Human Tug-of-War.—The class is divided into two equal teams. each having a captain. The captains stand on opposite sides of a line and their team mates line up behind them, each boy placing his arms around the waist of the player in front. The captains lock arms and on a signal each team pulls. The object is to see which team can pull its opponents over the line.

Knee Dip.—Stand on the right foot, reach behind you with the right hand and grasp the left foot. Bend and touch the left knee to the ground and rise again.

The Long Reach.—Mark a line on the ground. Toe this mark and with a stick mark the ground as far as possible from the line, rising again to position without having moved the toes from the mark. In returning to position the stick must not be drawn along the ground to support the body nor placed a second time on the ground.

Foot Throw.—Put a football between the feet in such a manner that it is held between the ankles and the inner sides of the feet. Then kick up backwards with both feet and try to jerk the ball over the head and catch it when it comes down.

Single Squat.—Stand on one foot with the other stretched out in front. Sit down on your heel without losing your balance or touching the ground in any way except with the

foot you are sitting on. Use your arms for balance and come back to upright position, still on one foot.

Chinese Get-up.—Two persons sit on the ground back to back with arms locked and, retaining this position, try to stand up.

Cat Fight.—The opponents bend forward, placing their elbows under a stick placed in back of their knees to hold it in place. They try to remain on their feet and shoulder the other man off his balance.

Hello, Mike.—Two boys blindfolded, lie on the ground with their heads toward each other and about a foot apart. Each has a boxing glove or a knotted towel in his hand. The first player says, "Hello, Mike, are you there?" The second player answers, "I am", trying to deceive his opponent as to his location. The first player takes one swing at his opponent with the glove or towel, trying to hit him. The second player then asks the question and the game continues.

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Chapter IX.

HOW TO TEACH PHYSICAL ACTIVITIES

Calisthenics.

In calisthenics, movements of the arms, legs. trunk and head are performed without equipment, or with hand equipment such as Indian clubs, lathi sticks, dumb-bells, lazium or wands. It is valuable in giving exercise to a large number of persons at the same time, but the interest of the group in this type of exercise depends chiefly upon the personality of the teacher and upon the variety of exercises and equipment used from day to day.

The aims of calisthenics are hygienic, educational and corrective. The hygienic aim is to exercise the muscles of the body, especially the big muscles of the trunk and legs, thus increasing circulation and the rate of respiration, stimulating all the vital organs and strengthening the muscles. This is best done by vigorous rhythmic exercises. The class should be breathing deeply naturally at the close of the calisthenics period.

The educational aims are to develop physical skill or motor control and to develop mental qualities such as accuracy and precision, self-control, alertness and discipline. Adequate control of the muscles of the body is necessary if one is to be efficient in the ordinary physical activities performed in life, such as running and jumping, and in the more complicated movements demanding perfect co-ordination of muscles and quick reaction. Desirable mental qualities are the secondary learnings resulting from a well-taught lesson. Accuracy and precision in body movements, it is believed, will have their effect on other phases of life. Calisthenics can contribute to this important training.

The corrective aim is to develop good posture and to correct any defects which can be corrected by remedial exercises, such as spinal curvature and visceroptosis. Chapter V goes into this matter in detail.

Types of Commands used in Teaching Calisthenics.

Response or order commands (commands not executed in rhythm) are used for teaching new exercises and for correcting postural defects, and are used as follows:—

Command given by words—Arms forward. . . .Raise!

Command given by words and numbers—Left knee forward and arms sideward. . . .One! Position. . . .Two!

Commands given by numbers. After the class learn a movement they execute it by number, the command being given in uneven time.

Rhythmical commands are usually given continuously in rhythm by number. The rhythm may be kept by clapping the hands instead of using numbers, if desired.

Words are sometimes used, such as Left! Right! Left! Right! etc. It is very satisfactory to perform rhythmical exercises to music. The class may sing a song or a band or gramophone may be used.

Order of Exercises for the Calisthenics Lesson

1. A few order exercises for posture training and for developing quick response to commands.

2. Rhythmic exercises in the following order:

Arm exercises.
Leg exercises.
Arm and leg exercises.
Light trunk exercises.
Heavy trunk exercises.
Speed exercises, such as running, hopping, jumping, etc.

In this way the lesson starts with light exercises and leads to more strenuous exercises gradually. Most of the lesson should consist of rhythmical movements.

Parts of Each Command.

There are three parts to each command: the preparatory command, the pause, and the command of execution ; for example:

Preparatory.	*Pause.*	*Executory.*
Arms forward	. .	Raise!
Arms forward raise	. .	One!
Arms sideward	. .	Stretch!
Arms forward and return in rhythm	. .	Begin!
Ready	. .	Begin!
Left	. .	Change!

The *preparatory command* is an explanation of the movement to be executed and must at first be given slowly and distinctly so that it is easily understood. Later it may be given more quickly.

It is not given sharply, as it would then resemble the executory command, which would lead to confusion.

The *pause* between the preparatory and executory commands should be of sufficient length to give the class time to understand the movement to be peformed.

With new classes the pause should be longer than with old classes. The class should gradually learn to respond more quickly to a command.

The *command of execution* is given quickly and sharply and should result in a quick response from the class.

Methods of Counting, Halting and Changing.

Counting.—For two-count movements, two counts; example: Arms forward raise and return . . . . Begin! One! Two! One! Two! etc.

For four-count movements, four counts; example: Arms forward . . . . One! Arms sideward . . . . Two! Arms forward . . . . Three! Position . . . . Four! Now, in rhythm . . . . Begin! One! Two! Three! Four! One! Two! Three! Four! etc.

The above is the best method to follow and may be used for any type of movement. It is most satisfactory because the class do not know when the exercise will stop and are therefore more alert.

Counting may also be from one to eight and back; for example: Arms forward raise and return . . . . Begin! 1-2-3-4-5-6-7-8-8-7-6-5-4-3-class-halt! This may also be used for four- or eight-count movements. It is not as good

as the first method for general use, but for continuous drills and exhibitions it is to be preferred.

Changing from the movement to another.—A cue is given on the next-to-the-last count, as follows:

1—2—1—2—change—left!
1—2—1—2—now—change!
1—2—3—4—1—2—change—left! or 1—2—3—4—1—2---now---change!
1—2—3—4—5—6—7—8—8—7—6—5—4---3---change---left! or now—change!

Halting an exercise.—A cue is given on the next-to-the-last count, as follows:

1—2—1—2—class—halt!
1—2—3—4—1—2—3—4—1—2—class—halt!
1—2—3—4—5—6—7—8—8—7—6—5—4---3---class---halt!

Methods of Arranging the Class for Calisthenics.

In any formation used there should be enough space between the students so that the hands do not touch when they are raised sidewards and that any forward or backward movement will not interfere with the person in front or in back.

In circle formation the class form a circle and the teacher stands in the centre.

In *half-circle formation* the class form a half-circle with the leader standing between the two end students.

In *line formations* the class stand in four or more lines which may be formed as follows:

Having previously marked white spots on the ground, have each boy stand on one of the spots.

Count off by fours. Twos, two steps, Threes, four steps and Fours, six steps forward. . . . . . March!

Count off by fours. Twos and Fours, two steps forward . . . . March! Twos, two steps forward and Threes, two steps backward . . . . March!

While marching in fours. On command, "Open order . . . March!" the class open order by raising the arms sideward. In place . . . . Mark! Class . . . . . Halt!

While standing in fours. Open order to the left . . . . March! the boy on the right stands still and the other boys move to the left, measuring distance by raising the arms sideward.

While standing in columns of fours. Open order in six counts . . . . Begin! 1—2—3—4—5—6! Number Ones and Fours step outward on the first four counts and the whole class step outward on five and six. Stepping out with one foot counts one and bringing the other foot to it counts two, etc.

While standing in fours. Right . . . Turn! First boy takes six steps, second boy four steps and third boy two steps forward.

How to Teach an Exercise.

By imitation.—In this the teacher performs the exercises and the class imitate him. A series of exercises is usually done continuously, the teacher giving a command for the change from one movement to another. The teacher performs a new exercise while the class are executing the previous one to inform the class what the new exercise is to be and then continues performing the previous exercise. When he gives the command, "Now . . . . Change!" the new exercise is begun. The teacher may count or not, as he likes; if he does not count, he must perform the exercises with the class. The imitation method is best to use with music.

By demonstration.—In this the leader demonstrates the exercise before the class while they are standing at attention or at ease and then gives the command "Ready . . . . Begin!"

By description.—The leader describes the exercises and then gives the command to begin: for example. "Arms forward raise, arms sideward stretch, arms forward stretch, return in rhythm . . . . Begin! One! Two! Three! Four! One! Two! Three! Four! etc."

By a combination of description and demonstration.—This is the most satisfactory method to use.

By a cue command.—This is a command to govern future action when the class are doing an exercise. The cue is a word informing the class of a change of movement to be

made or of an improvement to be made in the execution of the exercise being performed.

Examples:

Cue.		*Command of execution.*
To change from one movement to another without stopping:		
Now	. .	Change!
To change from one side to another without stopping:		
Change	. .	Left (or right) One! Two! etc.
Alter-	. .	nate! Left! Right! One! Two! etc.
To stop an exercise:		
Class	. .	Halt!
To correct pocture or to get better form:		
Head	. .	Up (Each word is used in place of a number, such as One! Two! Head! Up! One! Two! etc.)
Toes	. .	Pointed!
Legs	. .	Straight!

Progression in Teaching.

Progression in each exercise.—The students should show improvement in the execution of each exercise after sufficient practice. Each exercise has its details or parts which should be considered. For instance, in "Arms sideward . . . . Raise!" the palms should be down, fingers together, arms horizontal and straight.

The students should respond to each command more and more accurately and quickly as the exercise becomes familiar. The exercise should be done more vigorously also as it is mastered.

Too much of the period shuold not be spent in teaching a new exercise. A variety of those already mastered should also be used. However, as soon as an exercise is mastered, the class should begin learning a new one.

Progression from lesson to lesson.—A new class should be given more order exercises than usual until the students learn correct form. These are lessened gradually and the

rhythmic type substituted more and more until the standard plan is being followed.

New Class	Order Exercises.	Rhythmical Exercises.
Standard Plan	Order Exercises.	Rhythmical Exercises.

The class should always be learning something new or trying to get better form in the exercises learned in previous lessons. An exercise is not mastered until it can be done in good form. Progression may mean doing the same exercise better. Exercises already mastered should be performed from time to time.

Simple movements should be mastered before complex ones are begun. Begin with the elementary body movements which are two-count exercises, such as: Arms forward raise and return to position. Then give four-count movements, such as: Arms forward, sideward. forward, return to position. Six- and eight-count movements may then be given, but four-count ones are more often used.

Progression in types of combination movements.—After the single movements are learned, the class may be taught double movements, that is, moving two parts of the body at the same time. Example: Arms forward with left leg forward . . . . Raise! Then two double movements may be taught, such as: Arms forward with left foot forward . . . . One! Arms sideward with left foot sideward . . . Two! Arms forward with left foot forward . . . . Three! Position . . . Four! The movements may be made even more complex.

Additional Points to consider in Teaching Calisthenics.

Secure the attention of the entire class before proceeding.

Keep the aims in mind. The teacher should always keep in mind what he is trying to accomplish from a hygienic, pos-

tural and educational standpoint and plan his work accordingly.

Work for accuracy and precision. See that each exercise is done correctly.

Correct faults. Notice each student. Faults are corrected by: explanation, demonstration, or manual assistance (the teacher walks around the class and helps each student who needs correction).

The voice should be pleasant and the pronunciation correct and clear. A harsh and unpleasant voice irritates the students

Be a good example. The teacher should stand in good posture. He should not stand with his hands in his pockets nor with his arms folded. The students often imitate a teacher of physical activities as they usually have great respect for those with physical ability. For this reason the teacher should be a good example, refraining from using bad language and in every way setting high ideals in his own life.

Secure the respect and confidence of the class.

Perform the exercises on the opposite side: that is, if the class are raising their left legs sideward, raise your right leg. Thus the teacher and the class move in the same direction.

Do not anticipate your own commands. The teacher should not perform the exercise before the execution command is given.

Rhythmical exercises are done in different times. An arm exercise is done quite rapidly, but a trunk exercise must be much slower. Complicated movements are done more slowly than simple ones, especially until they are learned.

Do not keep the class at attention for a long period of time. Give them frequent rests.

Do not hold an exercise for a long time while explaining faults. Have the class come to position and then proceed to point out their errors.

Emphasize good posture throughout the lesson. Give commands frequently if necessary, such as: Stand...Tall! Chest . . . Up! Chin . . . In- etc.

Give enough exercise so that students are breathing deeply at the end of the lesson.

MARCHING.

Marching is useful in schools if not overdone. Only a small part of each lesson should be used for this activity and it should never take the place of calisthenics, self-testing activities or games.

In marching the sudents should learn to carry their bodies in good posture and to walk with a light, brisk step, with the toes straight ahead—not turned out. Training in alertness, self-control and discipline, such as responding quickly to commands and moving the body correctly according to each command, should be emphasized. Marching may be used with free movements of the body, such as running, arm, leg and trunk movements, etc., and in this way contributes to the development of organic vigour and firm muscles.

COMMANDS USED IN MARCHING.

Order or response command.—This is the most common command used in marching. Examples:

Right. . . . Turn!
Right turn by numbers . . . . . One! Two!

Rhythmic command.—This is used to keep the class in unison. Words used in rhythm:

Mark time. . . .Mark! Left! Right! Left! Right! etc., or Left! Left! etc.

Numbers used in rhythm:

Left. . . . Wheel! One! Two! Three! Four!
Fours left. . . .March! One! Two! Three! Four!
Four steps forward. . . .March! One! Two! Three! Four! Five!
(See Counting in Marching.)

PARTS OF EACH COMMAND.

Each command has the preparatory command, the pause and the command of execution as shown under Calisthenics.

In marching the command of execution is usually given when the left foot strikes the ground, except in the following:

When the class is standing.
On a right turn into line or on a right turn, forming twos, fours, etc.

Counting in Marching.

As has already been stated, counting is necessary in teaching new movements in order that they may be done accurately. The following are important facts to consider in counting correctly:

Add one extra count for each movement or combination of movements when the class are not marking time. The extra count brings the class to attention.

Examples:

Three steps forward. . . .March! One! Two! Three! Four! (Four brings the rear foot up to the other foot in a position of attention.)

Fours left. . . .March! One! Two! Three! Four! Five! (Five brings the rear foot up to the other foot in a position of attention.)

Fours left and twos left. . . .March! One! Two! Three! Four! One! Two! Three! (The second Three brings rear foot up to the other foot to a position of attention.)

There is no extra count when the class are marking time, as the extra count is not needed. Example:

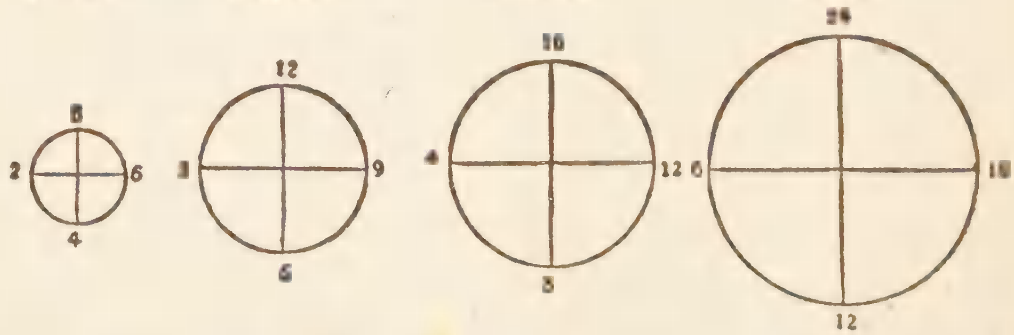
Fours left. . . .March! One! Two! Three! Four! and the class continue to mark time.

The number of counts to be used when wheeling depends upon the number of boys in each column.

Examples:

Columns of:

Twos Threes Fours Sixes



The count always begins with the left as the first step is always taken with that foot.

How to Teach Marching.

By demonstration.—The teacher may demonstrate a movement, such as left turn, etc., or he may ask a few students

to come forward and use them to demonstrate the movement to the class.

By description.—The teacher merely tells the class what is to be done. For instance, in the right turn he may say, "Right turn, turning on the right heel and left toe . . . One! Two!"

By a combination of description and demonstration which is the most effective method to use in teaching marching.

By a cue command, as mentioned under Calisthenics.

PROGRESSION IN TEACHING MARCHING.

Progression in each movement.—The first essential is to teach the part before the whole. For instance, in right turn the turn is taught first, showing how to turn on the heel and toe; then coming to attention is taught.

Movements should be taught by numbers until they are done correctly ; then the numbers may be omitted.

Examples:

Right turn by numbers...One! (make turn) Two! (come to attention.) Later, only Right...Turn! may be used.

Right...Wheel! One! Two! Three! Four! Five! Later, the numbers are omitted!

Progression in each lesson and from lesson to lesson.—Marching movements may be divided into four parts:

Movements from standing in line position.—The individual moves from one standing position to another without marking time. The class should learn this type of movement first. They are the simplest marching movements and include attention, dressing, turnings, stepping and various movements in fours.

Movements while marking time in line, but not marching about the field.—After movements from standing in line position are learned the class may do many of the same movements while marking time.

Movements while marching about the field.—After the class can mark time in line they should march about the field. Beginning with half step marching and leading gradually to full step, simple movements should be taught. Later more complex movements may be given.

Calisthenics exercises while marching.—Running and arm and leg exercises may be done ; for instance, knee raising or leg raising are excellent exercises to do while marching.

Progression in teaching should follow the order indicated, a new class being given movements from standing in line position mainly. After a sufficient amount of training they may be taught movements while marking time in line and then movements while marching about the field and exercises while marching. This order need not be followed absolutely, as simple marching about the field may be given at first, but none of the complicated movements should be taught until the basic movements are learned. The ideal plan is to give about one-third of the marching time to movements while standing and marking time in line and about two-thirds of the time to marching about the field and exercises while marching. This should be followed in teaching a class which has already had some training.

Other Things to consider in Teaching Marching.

In all wheeling the pivot man should turn in place for the correct number of counts.

The students in each column should stand close together and in a straight line.

Always keep time by the first person or column in the group. Each individual keeps step with the person in front of him. In this way all keep in step with the first column.

There should be a distance of one column length between each column when marching so that when the group wheels to form a line the distance between each column will be exactly right.

Each column should stand directly in back of the column in front of it: that is, each person should stand behind the individual in the corresponding position in the column in front so that all persons in the same position in each column form a staight line.

Marking should be in the proper tempo. There are 120 steps to the minute in ordinary marching and 180 steps to the minute in double-time marching.

Movements should be performed immediately on the command of execution. In the movements of columns the com-

mand is given when the right foot strikes the ground ; as the left foot strikes the ground the count begins.

Only the proper distance should be covered, according to the count. For instance, in fours left the column should wheel only one-quarter of the circle.

SELF-TESTING ACTIVITIES.

Self-testing activities include a varied assortment of activities, most of which test the individual's efficiency in handling his body. They are divided into four groups or types: athletic, tumbling, apparatus and pyramid. These activities are used to accomplish the following aims:

First, to develop physical skill or motor control. These activities give practice in the fundamental body movements, which, from an evolutionary standpoint, are responsible for the characteristic arrangement of the muscles in man's body. The most important of these movements are running, jumping, throwing, climbing, mounting, dismounting and swinging.

Second, to develop organic vigour, as suggested under Calisthenics. This is best done when the class is divided into small groups and the exercises done in quick rotation.

Third, to furnish wholesome recreation. All self-testing activities do not accomplish this aim, but most of them give much enjoyment to the performer. The more proficient a student becomes the more pleasure he will take in doing these exercises.

Fourth, to develop student leaders. If, when self-testing activities are being taught, a class of thirty-five students is to be kept active and at the same time protected from falls and given individual attention it is essential that student leaders be developed to assist with the teaching. The benefits of this training to students are numerous, but perhaps the greatest is that the quality of leadership is developed.

How to Teach Self-testing Activities.

By demonstration.—The teacher demonstrates the exercise and the class imitate him.

By description.—The teacher describes the activity progressively and the class follow out his orders. He may teach

the standing long jump, for instance, as follows: "Toe the line! Arms upward raise! Arms down and bend the knees and jump!" Or he may teach it by numbers, as follows: "Toe the line! Raise the Arms forward-upward . . . One! Bend the knees, swinging the arms downward and backward . . . . Two! Swing the arms forward and jump . . . . . Three!—One! Two! Three!"

By a combination of demonstration and description.—This is the best method to use in teaching a new movement.

By manual correction.—In this the teacher helps each student to assume the correct position by moving the student's arms, trunk or head.

By the follow-the-leader method.—The class imitate the leader (selected by the teacher) who sets one exercise after another in rapid succession.

How Self-Testing Activities may be Used.

Non-competitive method.—The class may be divided into small groups without leaders. The teacher sets the exercise and the groups follow. This is the best when teaching a new class, before the teacher can know which students to select as leaders.

The class may be divided into small groups, each group having a student leader. The activities are taught in the following ways:

- The teacher sets an execise for the whole group and the leaders teach it.
- Written instructions are given to leaders.
- Each leader teaches any activities he desires to teach.
- Each student in each group teaches an exercise in turn and acts as leader for that one activity.

Competitive method.—This may be used in the following ways:

Team competition.—The class is divided into teams and competition is held in the various activities. The teams may be permanent or temporary. If permanent it will be necessary to keep a score sheet of the competition from day to day. The team score will be recorded. In addition to team

competition in athletics, apparatus, etc., the team score in neatness, posture and behaviour should be kept.

Individual competition.—In this each individual competes against all others and his individual score is kept. Most of the activities may be used for this type of competition.

Each student should be given efficiency tests at the beginning and end of the school year and should be expected to show improvement if his record is below the norm or average. (See Efficiency Tests, Chapter XII.)

Progression in Teaching Self-Testing Activities.

Progression in each movement.—The parts of each movement should be taught before the whole. In the standing long jump, for instance, each part should be analysed: the first position of raising the arms; the second position of bending the knees and bringing the arms down; then, the swinging of the arms and jumping forward. Any exercise, including those using apparatus, should be analysed in the same way, giving attention to the approach, the execution of the movement and the dismount or finish. The student should march forward and approach the place where the exercise is to be done in good posture and with a quick step, perform the exercise properly, finish gracefully (bending the knees when landing on his feet), and march back to line.

Progression in each lesson and from lesson to lesson.—There should be a gradual improvement in each student as the work progresses. In each lesson simple movements should be taught first and complex movements later. At least one difficult movement should be included in each lesson, but most of the time will be used for the simpler movements.

Other Suggestions.

The students should stand in straight lines. Keep good discipline. Let the leaders assist with discipline.

One student performs at a time. When he is finished the next student leaves the line and performs the exercise. At

the finish of an exercise the student comes to attention and marches back to his place in line.

Boys should wear shorts if possible.

When apparatus is used, the teacher or leader should stand in a position of readiness to catch the performer if he falls.

All movements should be done in good form. Also, accuracy is more important than distance or speed until a movement is mastered.

After the students have practised sufficiently to gain a fair amount of skill and form, apparatus exercises and tumbling, as well as many of the athletic types of self-testing activities, may be done in rapid succession by the class without special attention to form. In this way each student will get a large amount of vigorous exercise in a short time.

GAMES.

Every normal child enjoys games. In addition to their recreational value they are important because of the training they afford in the fundamental movements of the body, such as running, leaping, throwing, etc., which result in the building of strong bodies as well as efficient ones ; also because of the opportunities for mental and moral development which they offer, when properly supervised. Proper supervision of games is vitally necessary during the early plastic years until the ethical ideals involved become instinctive reactions. Without proper supervision games may be detrimental, as right conduct in situations demanding honesty, fair play, self-control, etc., which so often arise during the playing of games, must be insisted upon if the individual is to receive good character training.

Games may be divided for convenience into two groups: major games, such as football, hockey, cricket, etc., and minor games, or those of a more simple nature, requiring less organization and less equipment. Half of the physical activities instructional period should be devoted to playing of minor games and several games periods set aside weekly for the paying of major games.

Teachers of games should study carefully the following suggestions:

1. Be familiar with the game before attempting to teach it.
2. Give full explanation as briefly as possible. Don't spend a long time talking. Teach by having the students act out certain parts of the game before it is played
3. See that all the students are playing or are busy. Use the odd players as officials, etc.
4. Have the equipment required at hand or easily available.
5. After explaining a game, ask for questions before play begins.
6. See that the rules are obeyed. This is important in elementary games as well as in major games.
7. Make the play happy and vigorous. The teacher should have the play spirit and get in the game himself at times.
8. Correct faults after the game is finished if it is an elementary game. Don't stop the play continually in the middle of the game.
9. Make the teams as evenly matched as possible and have an equal number of students on each side.
10. Use vigorous games most of the time, but quiet ones occasionally.
11. Encourage the backward players and those who are timid and shy. Praise their efforts and do not call attention to their mistakes and failures.
12. Encourage the losing team to better efforts.
13. See that the play field is clean and properly marked.
14. Use elementary games to teach the fundamentals of major games. This should be done especially in the lower grades. For instance, hockey and football dribbling may be used in simple line games.
15. Remember the secondary learnings in a game. The student is not only learning to play the game, but is learning respect for the rules. if the supervision is good.
16. Do not teach too many games in one period, as the students will enjoy those they understand thoroughly much more than those which they are in the progress of learning. Further, do not continue one game for too long a time.
17. In early adolescence, when the desire for team play begins to manifest itself, introduce more highly organized team games.
18. If there are too many students participating in a game, there is often a lack of interest on the part of the players arising from the infrequency with which each player gets an opportunity to participate. Correct this by dividing the students into more groups.
19. During the playing of strenuous games the teacher should watch the players carefully and any who show abnormal shortness of breath or who turn pale while playing should be removed from

the game. Students with organic defects or general debility should be allowed to play only quiet games.

Hints on teaching and coaching major games are found in Chapter X.

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Chapter X.

FUNDAMENTALS OF MAJOR GAMES.

Coaching or teaching the fundamentals of games should have an important place in both games periods and physical activities instrumental periods. Many of the elements of major games can be taught through elementary line and circle games. These may be taught in a small, shady space when it is too hot to play on the field. Following are the fundamentals of major games, with a few suggestions on how they may be taught:—

Association Football.

Kicking.—There are two kinds of kicks, one with the toe and the other with the side of the foot (either the inner or outer side). The latter is far more accurate and should be used when kicking goals and for accurate passes.

Two or more players may exercise kicking the ball back and forth across the field, kicking the ball when it is stationary as well as when it is moving. Line and shuttle relay games with football kicking may also be used. The forward line players may practise by attempting to advance the ball beyond the half-backs or full-backs and kick a goal. They may also practise kicking a goal past the goal-keeper from various angles.

Dribbling and passing.—These two elements are naturally taught together. A dribble is a series of short kicks at the toe with the ball kept close to the dribbler's foot. A dribble is usually of no value if the ball gets away from the dribbler's foot.

Players should learn to pass with both the inside and outside of the foot. In passing with the inside, a sweep of the leg in front of the body is used. The outside pass is done by pointing the toe in and giving the foot a sideward fling away from the body.

Dribbling may be used in elementary games, such as dribbling in and out Indian clubs or other objects placed two or three yards apart, dribbling to a particular point and back, etc.

Passing may be practised in circle passing races, as given on page 175 or in line games such as running with the ball or dribbling it to a designated point and passing it back to the next player.

Heading.—The eyes should be constantly on the ball on its downward course and the ball should be allowed to strike the

head at a point midway between the top of the head and the eyes. The ball should be guided in different directions accurately. Practice in leaving the feet and heading the ball while in the air is necessary, as well as heading while stationary.

Trapping.—A ball coming down from a loft kick or pass may be stopped in several ways:—

Chesting.—The ball strikes the chest, rolls to the ground and is recovered.

Trapped by the foot.—Raise the leg forward and step on the ball with a quick motion just as the ball strikes the ground or as it rolls toward you.

Leg and ground pocket.—Spread the feet slightly with the knees together and bend forward, forming a pocket between the ground and legs in which the ball may strike.

One leg and ground pocket.—A pocket is formed by one leg being raised backward ; the ball strikes near the other foot and bounces so that it hits the raised foot.

Trapping is a very important element in football and every player should be able to stop the ball and keep control of it.

Tackling and dodging.—Tackling is resorted to when taking the ball away from an opponent. It is done from the front by placing the foot against the ball just before the opponent kicks it. A player may also charge an opponent from any point except the rear and take the ball away. This is done by hitting him with the shoulders or hips.

In dodging the player keeps the ball under control by not letting it get too far away from him. Dodging may be done in the following ways:—

(*a*) Pretending to kick one way, but dribbling the other.
(*b*) Kicking or passing the ball with opposite foot to that which the opponent expects to be used.
(*c*) Keeping opponent guessing as to what will be done next.

Playing the various positions.—A player uninstructed in the game will run all over the field after the ball. He must first learn the different positions and the importance of keeping in his own area.

Forwards are attacking players and should be in the middle of the field or well down into the opponents' area if necessary. The wings are important in bringing the ball down the field and centering it and should be accurate kickers.

Half-backs are both offence and defence players and aid the forwards with the attack as well as defending their goal. The centre half-back is the pivot man of the team for all play.

Full-backs are defence players. They should never get out of their own half of the field.

The goal-keeper should be quick and clever with his hands and feet. He should always be alert and should almost never go away from his goal. He should never kick at a rolling ball if he has time to pick it up.

Offence plays.—Playing one strong, sure-footed forward when near the opponents' goal.

Drawing defence to one side of field and playing the other.

'V' formation of forwards: the outside wings are furthest down the field and the centre forward furthest back, forming a V. This is used when progressing up the field.

Converging the charge of forwards and halves when near the opponents' goal.

Defence plays.—Man to man defence in one's own territory.

Each defence man being responsible for a certain area.

Playing the centre forward on defence as well as offence.

Playing the centre forward and inside men on defence as well as offence.

Rotating backs. When the ball is on the right side of the field the left backs move to a position in front of the goal and *vice versa.*

Rules.—These should be familiar to every player and may be found in any standard football rule book.

Hockey.

Holding the stick.—Players may hold the stick at the middle with one hand or with the left hand near the top and the right hand near the middle.

Dribbling.—This is done by tapping the ball quickly with the stick, keeping it close to the stick to prevent the opponent from getting possession of it. The ball is guided right by turning the heel of the stick forward, and left by turning the toe of the stick left. It may also be dribbled as follows:—

Fifteen inches to the right oblique front of right foot.

To the right of and slightly behind the right foot.

All kinds of dribbling relay races may be played, such as dribbling in and out Indian clubs or other objects, dribbling to a designated point and back, dribbling around the group, etc.

Passing.—In passing to a player on the right side the ball is passed far enough ahead of the player for him to get it on the run. In passing to the left side the ball is sent to the feet. Players should always stand with their feet straight ahead when receiving a ball. Various passes are:

Push pass.—The stick is placed in back of the ball and pushed in any direction. This is done usually while dribbling.

Scoop pass.—This is similar to the push pass except that the ball is raised off the ground over an opponent's stick.

Driving or regular striking pass.—The ball is struck by the stick as in a free hit. Stopping with hand or foot and driving may be practised.

Passing relay races may be played to practise these strokes, such as dribbling the ball to a designated point and passing it back to the next player. The forward line players may practise

by attempting to advance the ball beyond the half-backs or full-backs and shoot a goal. They may also practise shooting a goal past the goal-keeper from various angles.

Stopping the ball.—The ball should usually be stopped gradually because, if stopped suddenly, it may roll away from the player ; however, there are many times when it must be stopped quickly. The ball may be stopped with the hand or with the foot. If caught it must be released immediately to fall perpendicularly to the ground. The foot, if used to stop the ball, must be removed immediately.

Shooting for goals.—Practice shooting for goals is good training. This may be done from various positions in the field with either a stationary or moving ball. Each one may dribble and shoot, receive a pass and shoot, etc.

Left hand lunge. This is usually used to spoil an opponent's dribble. Stand with the feet a few inches apart, raising the stick to the right side about waist high. Take a good-sized step oblique forward with the left foot, swinging the stick in the same direction forward and downward with the right hand, which releases its grasp of the stick as the stick moves downward. When the stroke is completed the left knee is bent and the left arm fully extended. Lunges may be made from the front, side or back, the ball being hit straight ahead from the lunger.

Dodging.—This is most useful for forwards going down the field with the ball. Following are some methods of dodging:—

Dribble ball to within three feet of opponent, push ball to the right of him and run to his left, recovering the ball beyond.

Dribble ball and when near opponent draw the ball to the left and continue dribbling.

Dribble ball and when near opponent stop the ball, using reverse stick, and hit to a team mate.

Scoop the ball over opponent's stick and follow the ball.

The bully.—This is used to open the game. Every player should learn how to bully. Following are methods of getting the ball for one's own team:—

Hit the ball back to your centre half who hits it out to a wing.

Draw the ball back, using reverse stroke, and pass to an inside man.

Scoop the ball over the opponent's feet.

Draw the ball back and then go forward with it.

Raise stick and let opponent hit to one's own centre half.

Positions of players. It is important that the beginner should know the positions of the players on the field and the necessity for playing the positions properly. Each player must keep to his own area.

The *forward line* consists of five players: the centre forward, the inside right and inside left and the two wing men. These are

the attacking players of the team, their object being to get through the opposing line to score a goal. They should play their areas and concentrate on the opponent's weak points. The wing men are valuable in carrying the ball down the field and centering it. Team work wins more games than individualistic play. Speed and accuracy are the most important factors to master, but accuracy should come before speed.

The *half-backs* are the centre half, right half and left half. They play behind the centre forward, right wing and left wing respectively, standing about five yards behind these men when play begins. They are both offence and defence men, as they follow the forwards up the field in offence play and come back for defence when necessary. The centre half is the pivot of the team and should be an exceptional player both in offence and defence.

The *full-backs* play behind the half-backs. They take position in back of the inside forward men and are defence men entirely, never advancing out of their own half of the field. They attack the opponents who break through the half-backs and should be good attackers and drivers and clever at stopping the ball with the hands, feet or stick.

The *goal-keeper* must have a good eye and be able to hit the ball with accuracy and speed, meeting fast balls with courage. He stands two feet in front of the goal line and should always be alert, even at times when it seems unnecessary.

Offence and defence play.—Hints regarding this can be found under offence and defence play for football. It should be remembered that the best defence is a good offence.

Rules of the game as given in a standard rule book should be familiar to every player.

CRICKET.

The following is not intended to give the fundamentals in detail, but simply to give suggestions:—

Fielding.—Catching and stopping balls:—*High balls* should be caught with both hands and drawn to the waist. *Fast straight balls* should be caught in front and drawn to the waist. Often a ball may be caught and drawn to the right side in preparation for the throw. *Grounders* may be stopped in two ways: (1) Stand with heels together and toes out and stip the ball in front of feet. (2) Stand with the left leg forward and body turned slightly to the right; reach forward for the ball and draw it back to the right side in preparation for the throw.

Practice should be had in catching and stopping high balls, fast, straight balls, ground balls without the bounce, and ground balls with the bounce. Catching and stopping may be used in simple line relay races, such as running to the designated spot and throwing or bouncing the ball to the next player.

Throwing.—The bent over-arm throw is most effective, although at times the ball is thrown under-arm when the player is near the wicket, in order to save time in throwing.

Throwing for accuracy should be practised, such as knocking down one wicket, throwing the ball back and forth between players, etc. Practice in throwing and catching may be combined.

Bowling.—How to hold the ball for the delivery: Grip it lightly with the fingers, not holding it in the palm.

How to run and deliver the ball: The run and throw should be as natural as possible without unnecessary action. The arms should be high and the body straight. Players should learn by practising the correct form without paying much attention to whether the ball hits the wicket or not. They should practise good form without the run before attempting to throw with the run. Later they may practise speed, accuracy and putting a spin on the ball with wrist and finger action. The knees should never be bent more than necessary.

Batting.—Stand with the legs eight to twelve inches apart and with the weight equally distributed on both feet so that a short or long step can be easily taken to meet the ball. The bat should be held with the left hand near the end and the right hand just below it. By resting the bat in front of the wicket with the striking surface facing the opposite wicket and the upper end leaning slightly forward, one can assume the grasp so that when the bat is either swinging back and forward to meet a ball or extended forward without a swing, the striking surface will meet the ball.

Players should learn how to meet high, wide or close balls. The bat may be swung, or the ball struck without swinging the bat. The latter is used chiefly in protecting the wicket or when overpitched, underpitched or awkward balls are delivered. Do not step away from the ball except when absolutely necessary, and never step in front of the wicket.

Driving, cutting, glancing and hooking are essential to good batting. Care must be taken so that the batter will not be caught out. The ball should be batted on the ground until skill in striking to the end of the field or in placing the ball has been acquired.

The wicket-keeper.—Great ability in stopping fast or slow balls coming high or low and from angles is demanded of the wicket-keeper. He should stand with legs apart, trunk bent forward and elbows resting on the knees, with the hands in readiness to receive the ball. From this position he must move right or left and reach in any direction as the situation may require.

Defence play.—The exact positions of the fielders depend much upon the types of balls bowled, the skill and peculiarities of the batter, the position of the sun and the direction of the wind.

A player should know exactly what to do with a fielded ball. This requires quick judgment and accurate throwing. Fielders should assist each other at all times: that is, the nearest fielder to

the man who is receiving the ball should back him up so that if the ball is missed the assisting fielder may stop it.

Offence play.—The best offence in cricket is accurate and varied batting and good judgment in running between wickets. The ball should be batted to unguarded spaces if possible. A batter who can protect his wicket and place the ball accurately will be a high scorer.

Rules of the game as given in a standard rule book should be familiar to every player.

BASKETBALL.

Catching.—In basketball the ball is handled with the hands only and not with the feet nor with playing equipment. For this reason the beginner must learn to catch the ball and keep control of it.

In the *standing catch* the ball is caught while the player is stationary.

In the *running catch* the ball is caught while the player is in motion. It should be thrown a little ahead of the catcher who, when the ball is caught, steps immediately or begins to dribble or passes the ball to some one else or shoots a goal.

Passing.—A pass is made while the player is either stationary or in motion It is made to a team mate and must be done in such a way as to avoid interference by the opponent. Following are various kinds of passes:—

In *two-handed passes* the ball is thrown from both hands, as follows:—

Chest pass.—The ball is thrown from in front of the chest.

Underhand pass.—The ball is thrown from in front of the thighs or even higher with a forward movement of the arms.

Overhand pass.—The ball is passed from over the head position, the arms moving forward and downward.

Sidearm pass.—The ball is held with both hands over either the right or left shoulder or at the right or left side.

In *one-handed passes* the ball is usually thrown with the right hand, as follows:—

Underhand pass.—The ball is held below the abdomen.

Overhand pass.—The ball is held on the right side at about shoulder height.

Hook pass.—The thrower snaps the ball over his head or just in front of or in back of it with a hooked motion of the arm. The arm is usually curved over the head when the ball leaves the hand. This is a very useful method of passing.

The *bounce pass* is made usually with two hands. The ball is bounced on the ground in such a way that one's team mate will receive it properly. This pass is used only in situations where

other passes cannot be used. The ball may be thrown under an opponent's arms and bounced to one's team mate.

A good pass will be received by the catcher between the hips and the shoulders. If the ball is thrown lower or higher it is difficult to catch.

Catching and passing can be used together in relay races and boys can learn many of the fundamentals without actually playing the game.

Dribbling.—This is bouncing the ball on the ground with either hand while moving or standing, without holding it or letting it rest on the hand, at the same time keeping it away from the opponent. Dribbling should never be used if the ball can be passed, except when there is a clear space between the dribbler and the basket in which to score. It may be practised as follows:—

Dribbling in and out Indian clubs or other objects.
Receiving a pass on the run and dribbling.
Dribbling and shooting a basket.

Relay races such as dribbling to a designated point and back, dribbling to a designated point and passing back, etc.

Pivoting.—A player is allowed to take one step with the ball. Pivoting is really taking a long step in any direction and rotating on one foot in order to avoid an opponent. The stepping leg is always bent when the foot strikes the ground. Following are some methods of pivoting either forward or backward:—

Quarter-turn pivoting right or left.
Half-turn pivoting right or left.
Three-quarter turn pivoting right or left.

Shooting baskets or goals.—The player should learn to shoot goals from all possible angles while standing near the goal and while standing at a distance from the goal. Distance shots should rarely be tried when there is an opportunity to dribble and make a short shot or to pass the ball to a team mate nearer the goal. In shooting for a goal the ball should not be thrown in a straight line or with too great speed, but should be thrown high so that it comes down on the basket, going through the basket clean or first touching the backboard. Both hands should be used whenever possible, but a player should be able to shoot with one hand when necessary. Two-handed shots are usually thrown from the chest. After shooting, the player should follow the ball immediately in order to recover it. A player should be able to shoot a goal while moving as well as while standing.

Shooting fouls.—This is done in two ways:—

In the *push shot* the ball is thrown from the chest, describing a semi-circle and coming down on the basket.

In the *long underswing shot* the ball is swung between the legs or from in front of the knees with a forward motion of the arms, which are kept straight. It describes a semi-circle and comes down on the basket.

Shooting may be used in relay races, each man shooting a basket, recovering the ball and giving it to the next player. It may be combined with dribbling and passing.

Position of players.—There are five men on a team: two forwards, two guards and one centre. In general each player keeps to his side of the playing area, but this is not a hard and fast rule in basketball. At the beginning of play each forward takes any desired position in his quarter of the court and the guards do likewise. The centre stands in the centre circle for the toss, his object being to tap the ball to one of his team mates after the ball has reached the height of the toss.

Offence and defence play.—The *zone system of* defence, in which each player has a particular area to defend:

Five-man offence and defence.—This is perhaps the most satisfactory method, and may be used as follows:—

(1) The three-two system, in which three men are forward and two men back near the opponent's basket in the defence area. As soon as the opponents secure the ball the players immediately assume this position on the court.

(2) The two-one-two system, in which two men are back, two forward and one in the centre of the defence area.

Four-man offence and defence.—Two forwards, the centre and one guard play offence, and two guards, the centre and one forward play defence. When an opponent secures the ball the four defence players assume position in the defence area immediately.

Man-to-man defence.—Each player has a particular opponent to guard when the opposition has possession of the ball.

Rules should be familiar to every player.
Hints—Accuracy should be developed first; then speed.
Pass the ball whenever possible.
Play the ball—not the man.
Avoid unnecessary dribbling.
Teamwork is most important.

Volley Ball.

Passing.—When the ball is received from the opponent it should never be returned immediately; advantage should be taken of the three touches allowed by the rules. The player receiving the ball should, if he is a back court player, pass it to the front line where one player tosses it up for spiking. This procedure is essential to good teamwork and is most effective for winning games.

The ball should be passed, not in a straight line, but in an arch at least ten feet high. It should also be passed with both hands, using the finger tips and thumb. A low ball should be passed with a jerk or snap of the forearm or arm upward from the thighs or

waist, while a high ball is passed by raising the hands in front of and above the head and snapping the ball upward.

Serving.—The ball should always be served into that part of the opponent's area where it is most difficult for them to make a good return or pass. The best places are near the left side line and to the rear of the court.

Underarm serve.—The ball is struck with the fist or heel of the hand from a resting position on the other palm or just as it is tossed from the palm.

Overarm serve.—The ball is thrown high and struck while over the head with the palm or with the fist. This is a difficult serve to learn, but is very effective when mastered.

Set-up and Spiking.—The ball is always set-up by a front line player. He snaps it so that it rises not less than ten feet in the air at a distance of about one foot from the net. When the ball is thus in the air a spiker jumps up and with tremendous speed snaps or hooks the ball into the opponents' territory. Usually the team is arranged with set-up men and spikers occupying alternate positions. As a rule the spiker should be tall with a good spring in his legs.

Position of players.—In India volley ball is usually played with nine men on a side, but it is a much faster game with six on a team. With nine players on a side there are three rows of players. The first row, which stands near the net, consists of the centre forward, right forward and left forward. The second row, which stands across the centre of the court, consists of the centre, right centre and left centre. The back row consists of the centre back, right back and left back. The players do not play the same positions throughout the game, but shift when the opposing team lose the serve, the front line to the right, the centre line to the left and the back line to the right. (In this way the right forward becomes the right centre, the left centre the left back and the right back the left forward, the other players moving accordingly.)

Offence play.—Important factors in a good offence are:—

Set-up and spiking.—The best offence is to be able to set up the ball and spike it over the net. The best place to spike the ball is between the centre line and the forward line. However, the set-up determines the placing to some extent.

Defence play.—Each player must defend his area and not interfere with another player's area unless absolutely necessary. When receiving a serve one man of the forward line should play the net while the other forwards play back from the net. The man at the net should be a set-up man. Important factors in a good defence are:—

Receiving the service properly and setting the ball up at the net.

Handling all returned balls properly. The players should always be alert and ready to receive the ball. They should stand in a

position with legs apart and knees slightly bent, with arms held about two feet apart in front of the shoulders so that a high or a low ball can be received efficiently.

Rules as given in a standard rule book should be familiar to every player.

SIMPLIFIED RUGBY.

This game resembles Rugby in many ways as it includes passing the ball with hands or feet, kicking the ball and running with the ball. There are two ways to play this game: with touching and with tackling. In the touching game a player who is touched must get rid of the ball immediately. Players may attempt to take the ball away from an opponent and in this way have much rough play, but tackling a player's legs or body is not allowed. In the tackling game a player may advance with the ball until he is stopped completely by his opponents. The object of the game is to *carry* the ball over the opponent's goal line. A rugby ball is used.

Passing.—With the hands, while standing or running:—

The ball may be passed in any direction with one or both hands. The spiral pass is an excellent one-hand pass. The ball is placed on the palm with the fingers over the lacing so that when the ball is held at shoulder height at the side it is pointed forward. An ordinary throw is made in such a manner that the ball rolls off the hand and continues turning through the air with one end pointing forward.

With the feet, while standing or running:—

A rugby ball is best passed with the instep, the outside of the foot or the upper outer front of the foot.

Catching.—As the ball is caught it is drawn in to the body and held there so that it cannot be taken away from the catcher. Players should practise catching high balls, long straight passes and short passes. When catching a high ball it is necessary to form a pocket with the arms so that when the ball comes down it may fall into the pocket.

Players should also practise standing and running catches. The ball should be thrown slightly ahead of the catcher in the running catch.

Kicking.—This should be practised while standing and while running, with the ball on the ground or in the hands. A ground ball is more accurately kicked with the inside of the foot, although the toe may be used when the direction of the ball is of great concern.

When kicking a ball from the hands the arm should be held out straight in front, but downwards with the ball pointed forward. The ball is kicked with the upper outer part of the foot.

In the drop kick the ball is held pointing downward at about the height of the knees or lower. It is dropped to the ground so

that the end hits first and as soon as it strikes or as it bounces slightly it is kicked. When learned this is a very accurate kick.

Trapping.—This should never be done in simplified rugby when the ball can be caught. It is done in the same way as in football.

Picking up the ball.—Picking a moving or standing ball off the ground is an important element of the game. When running for the ball the trunk should be bent forward with the arms extended downwards and the palms facing forward. The ball can then be scooped up or grasped with the hands.

Running with the ball.—A player is allowed to run with the ball and should do so whenever possible. Dodging is important when running with the ball. Following are some methods of dodging an opponent:—

Step one way, but go another.

Throw the ball over the opponent's head and catch it on the other side.

Feign passing the ball, but keep possession of it.

Touching and tackling.—In the *touching game,* when an opponent is running toward you with the ball, stand with feet slightly apart and knees slightly bent and with arms extended obliquely forward. This position is one of preparedness to move in any direction the opponent may take.

In the *tackling game,* an opponent may be prevented from running by a firm hold on his trunk, arms or legs. Diving through the air and tackling an opponent before the feet touch the ground is forbidden

Position of players—At the beginning of the game the players line up much the same as for football, there being eleven players on a side. The forward line consists of the centre forward, the inside right, the inside left and two wing men. These are the offence players. The half-backs are both offence and defence players. The centre half is the pivot of the team. The full-backs are defence players and should keep to their own half of the field. The line-keeper corresponds to the goal-keeper in football, but guards the entire line as there is no goal. The line-keeper plays near the line and follows the ball right and left across the line and must be good at getting possession of the ball. He should be a fast runner and a good kicker and thrower, yet of good weight so as to have an advantage when fighting for the ball.

Offence play.—The wing men follow the line of least resistance and therefore the ball should be played to them whenever possible. Following are some offence tactics:—

'V' formation of forwards as in football.

Convergent charge of forwards and halves when near opponents' goal line.

Unexpected pass to wing man when near goal line.

Defence play.—Man-to-man defence.—Each player has an opponent to guard.

Area method.—Each player has an area to guard.

Centre forward plays on defence as well as offence.

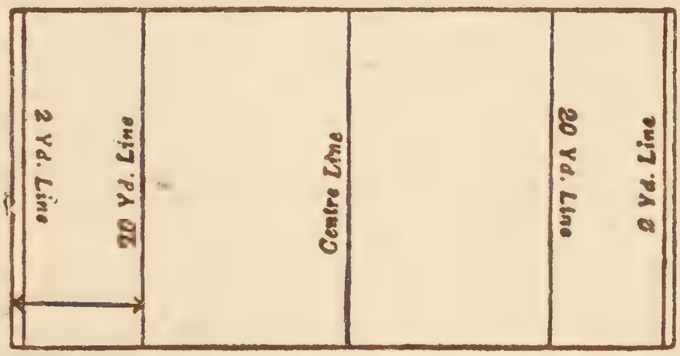
Rules for the tackling game.

Rule I:

The game shall be played with not more than eleven players on a side. These shall be called the centre forward, the inside right, the inside left, the two wing men, the centre half-back, the left half, the right half, the two full-backs and the line-keeper. Substitutes may be allowed in place of injured players.

Rule II:

The dimensions of the field of play shall be: maximum length, 130 yards; minimum length, 100 yards; maximum breadth, 65 yards; minimum breadth, 50 yards. The field shall be marked as shown in the diagram.



Rule III:

The ball shall be oval in shape and of the following description so far as possible:—

Length in line	... 11 to 11¼ inches.
Circumference (end on)	... 30 to 31 inches.
Circumference (in width)	... 25½ to 26 inches.
Weight ...	... 13 to 14½ ounces.

Rule IV:

No player shall wear dangerous projections, such as buckles, rings, etc.

Rule V:

The game shall be played in two periods of twenty minutes each. The interval at half-time shall not exceed five minutes. The ends shall be changed at half-time.

Rule VI:

The winner of the toss shall decide on which side of the field his team shall play for the first half.

Rule VII:

A referee shall be appointed whose duties shall be to enforce the rules and decide all points of dispute ; and his decision on points of fact connected with the play shall be final, so far as the result of the game is concerned. He shall also keep a record of the game and act as time-keeper. In the event of any ungentlemanly behaviour on the part of any of the players the offender or offenders shall be cautioned, and if any further offence is committed or, in case of violent conduct, without any previous caution, the referee shall order the offending player or players off the field of play, and shall transmit the name or names of such player or players to the athletic association. The referee shall allow for time wasted or lost through accident or other causes and suspend or terminate the game whenever, by reason of darkness, interference of spectators, or other causes, he may deem it necessary ; but in all cases in which a game is so terminated he shall report the same to the athletic association under whose jurisdiction the game was played for their action in the matter.

Rule VIII:

Two linesmen shall be appointed, whose duty (subject to the decision of the referee) shall be to decide when the ball is out of play, who is entitled to the throw-in, and whether or not the ball was carried over the end line. They shall also assist the referee in carrying out the game according to the rules.

Rule IX:

The play begins by the referee tossing the ball in the air between the two forwards at the centre of the field.

Rule X:

There is no off-side. A player may run with the ball until he is stopped, that is, held by a player of the opposing team.

Rule XI:

Players are allowed to kick, pass and throw the ball and also to run while carrying the ball.

Rule XII:

When the ball is held by two or more players in such a way that the ball cannot be put into play, the whistle is blown and the ball is tossed up between two opposing players at the spot where the ball was held.

Rule XIII:

The throw-in from the side lines must be made at a right angle from the side line. The ball must be thrown sideways over the head into the field with one hand.

Rule XIV:

When the ball is carried over the opponents' goal line two points are scored.

When the ball is kicked, rolled or thrown over the opponents' goal line no points are scored and the ball is put into play by a toss-up on the opponents' 20 yard line.

Rule XV:

When a defending player kicks or passes the ball or runs with the ball behind his own goal line the ball is put into play on the two yard line by a toss-up.

Rule XVI:

Unnecessarily rough play, such as kicking, punching, tripping or elbowing an opponent, is not allowed. Penalty: the ball is put into play on the 20 yard line of the team making the foul if the foul is made outside their 20 yard line, and on the 2 yard line of the defending team if the foul is committed by the defending team inside their own 20 yard line. (In either case the ball is put into play by a toss-up.)

Rule XVII:

Tackling a player below the knees or jumping through the air and tackling an opponent while the feet of the attacker are off the ground is forbidden. Penalty: as in Rule XVI.

Rule XVIII:

No player shall hold an opponent who is not carrying the ball. Penalty: a kick or pass forward at the place of infringement.

Rule XIX:

Waste of time caused intentionally by any player, or by a side, is illegal. Penalty: a free kick or pass to the opposing team at the spot where the foul was made.

Rule XX:

If the game ends in a tie the teams shall play five minutes overtime in order to break the tie. This process shall be continued until the tie is broken. The full five minutes must be played in each overtime of play.

Rules for the touching game.

All the above Rules, except Rules X and XVII, for the tackling game apply also to the touching game, with the following additions:—

Tackling an opponent is forbidden. Penalty: as in Rule XVI.

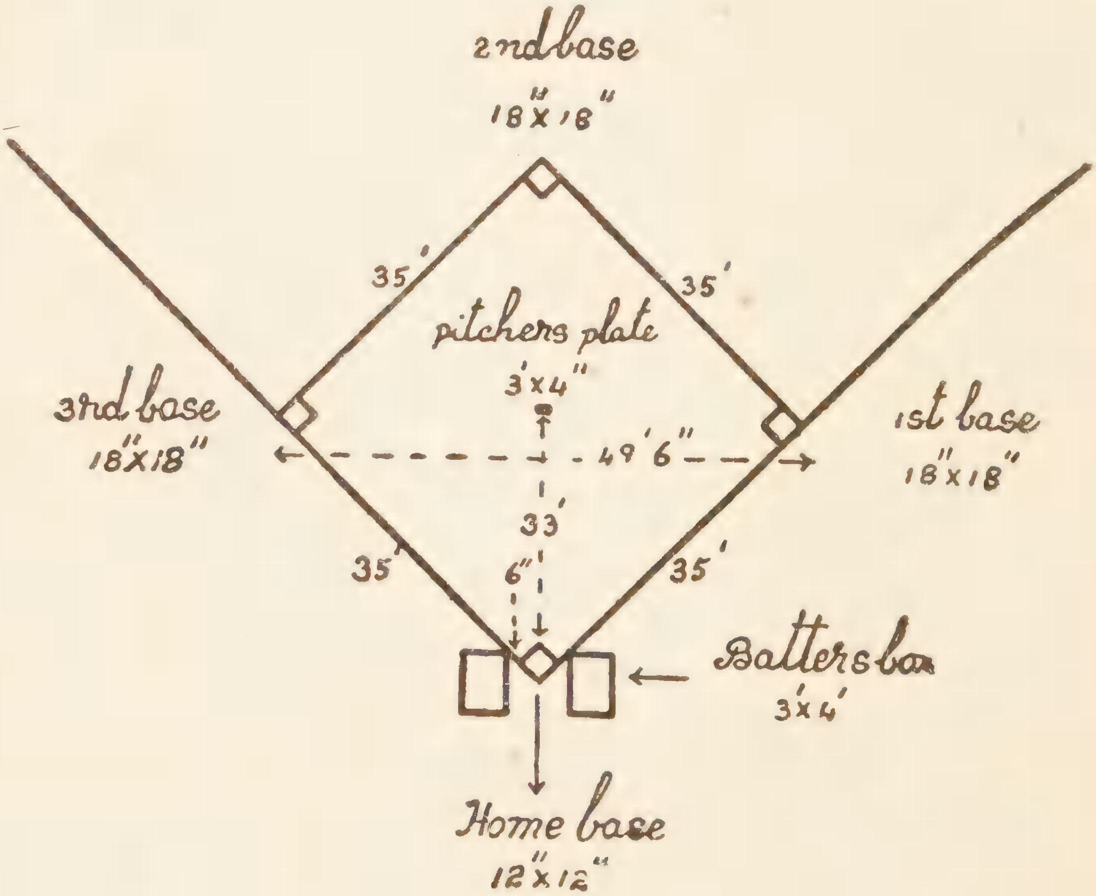
If a player does not stop as quickly as possible on being touched the ball goes to the opposing team on the spot where the player was touched. The player putting the ball into play may run with, kick or pass the ball and the opposing players must stand at least five yards away from the spot where the foul was committed.

There is no off-side.

Playground Ball.

This is an excellent, inexpensive game. The rules can be found in "Rules of Games and Sports," as compiled by H. C. Buck and published by the Y.M.C.A. Publishing House, Calcutta.

Before the fundamentals are discussed, it might be well to explain briefly what the game is like. At one corner of a hockey or football field a diamond, each side of which is 35 feet long, is marked on the ground. A home base one foot square and first, second and third bases, each eighteen inches square, occupy the four corners, as shown in the following diagram with other details:—



There are ten players on each team. One team are the batters, while the other are the fielders The fielders are the catcher, pitcher, first baseman, second baseman, third baseman, left short stop (who stands between second and third bases), right short stop (who stands between first and second bases), left fielder, centre fielder and right fielder.

The bat is 2¼ feet long and not more than 2 inches in diameter at its largest part. The ball is 14 inches in circumference and not more than 8¼ or less than 8 ounces in weight, made of a yielding substance covered with leather. (In an informal game a round stout stick and home-made ball covered with canvas or ordinary string will do if necessary.)

The pitcher throws the ball underhand and if it goes over the home base it is struck by the batter. The ball when batted must land between A and B in the diagram to be fair. When the ball is hit, the batter immediately runs to first base, the fielders attempting to throw him out by throwing the ball to the first baseman. If the first baseman gets possession of the ball and touches first base before the batter reaches it, the batter is out. The batter must run around the diamond, touching each base, before a run is scored. This does not have to be done at one time. The batter may stand on first base and run when the next batter has struck the ball. In this case, if the fielder throws the ball to second base before the runner gets there, he is out. Any base runner may be touched out when running between bases. If a player is standing on a base and a high ball is batted, he should not advance before the ball is caught. If he does so and does not return to his base before the ball reaches that baseman, he is out.

A player is out:—(*a*) If he strikes at the ball three times without hitting it, unless the last strike is a "foul ball" (a hit ball which does not go inside the diamond). At any other time a "foul ball" counts as a strike.

(*b*) If fairly hit ball or a foul ball at least ten feet high is caught before it strikes the ground.

(*c*) If he strikes at a pitched ball and it touches any part of his body before touching the ground.

(*d*) If, after batting the ball inside the diamond (between A and B), he is unable to reach first base before the ball.

(*e*) If a player touches him with the ball while he is running between bases.

Throwing.—The ball should be thrown in a natural overhand manner, as this is best for speed and accuracy. Practise the following:—

Throwing the ball in the air to another player.

Throwing accurately back and forth. Two lines of players may throw back and forth alternately.

Throwing from base to base; from short stops to bases; from fielders to bases, etc.

Catching.—A ball thrown *chest or waist high* is caught with both hands and to break the force of the impact the hands are drawn to the body as the ball is caught.

When catching a *high ball* the hands are immediately drawn to the abdomen.

Stopping grounders.—"A grounder" is a ball rolled on the ground or batted to the ground and may be stopped in two ways:—

First, the player stands with both feet together and stops the grounder with his feet.

Second, he stands with one foot forward and reaches forward, grasps the ball and draws it backwards, the right arm thus becoming ready for the throw.

Pitching.—The ball is thrown underhand, the arm being straight when the ball is thrown. Practise throwing over a stone or home base. Curved balls are thrown by putting a spin on the ball.

Batting.—To bat *pitched balls* the batter stands at the left side of the home base with his left side toward the pitcher and his feet together, and the bat held at the right side with the tip pointing upward at an angle of about 45 degrees. The batter swings the bat horizontally in front of his body (not downward as in cricket), at the same time taking one step toward the pitcher on his left foot.

Bunting is a method of hitting a ball so that it will move only a short distance. When the ball is pitched the batter immediately grasps the bat at its centre with his right hand, turns and faces the ball with the bat held at the right side near the chest. The ball is struck with a forward-downward thrust of the bat instead of the usual swing.

Batting practice may be done in connection with fielding.

Base-running.—Running around the bases, touching each in turn, and batting pitched balls and running to first base should be practised.

Position of players.—The *catcher* stands behind the home plate and catches all pitched balls, usually before they touch the ground. He has charge of home base.

The *pitcher* does all the pitching and some fielding.

The *basemen* do fielding and have charge of their respective bases.

The *short stops* field the balls and assist the basemen when necessary.

The *fielders* catch or stop all balls in their areas and throw them back to the infielders (pitcher, basemen, short stops and catcher).

Special practice.—The following should be practised:—

Hitting ground balls to the infielders who throw the ball to first, second or third base or to home base.

Hitting high balls to fielders who practise catching them and throwing the ball to home base or to any of the basemen.

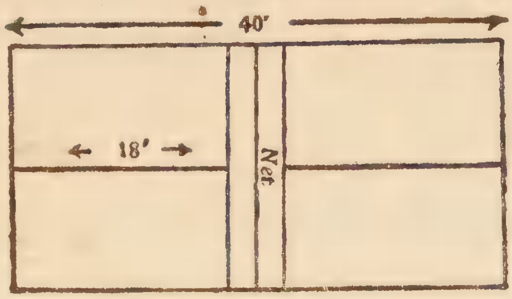
Rules should be familiar to every player.

Tenikoit.

"The main difference between lawn tennis and tenikoit is that instead of batting a ball with a racket back and forth over a low net, the players toss a rubber ring with their hands back and forth over a high net; and, as in the game of lawn tennis the ball, so in the game of tenikoit the ring, is sent back and forth, over the net, until one player fails to return it, or puts it into the net or outside of the court.

"The *doubles court* shall be 40 feet long and 20 feet wide. It is divided across the middle by a net, the ends of which are attached to posts standing one foot outside of the court on either side. The width of the court is divided in half by a line drawn

the full length of the court thus forming the half courts as shown in the illustration.



" The *single court* is 40 feet long by 15 feet wide, divided in length the same as the doubles court. The court may be marked out with tennis marker or tapes cut to length.

" The net is 22 feet long and 36 inches wide with a two-inch top binding of white canvas. The height of the net is six feet at the posts.

" The ring shall measure approximately four and one-half inches inside diameter and seven inches outside diameter and is made of soft moulded rubber. A rope ring may be substituted.

General Rules.

" No. 1. The choice of sides and the right to serve in the first game shall be decided by toss.

" No. 2. The players shall stand on opposite sides of the net. The player who first delivers the ring shall be called the server and the other the receiver.

" No. 3. When serving, the server shall stand behind the base line and within the limits of the half court. The server's partner and the receiver's may take any position in their own court.

" No. 4. The service shall be delivered from the right and left courts alternately, beginning from the right in every game, and the ring served shall drop within the half court-line and the side line of the court which is diagonally opposite to that from which it was served, or upon any such line. Each player serves a game.

" No. 5. The ring must always be played or served with an upward tendency, no matter whether the ring be taken high or low. No balking and hesitating is allowed.

" No. 6. Either forehand or backhand play is allowed, except the serve which must be forehand.

" No. 7. A ring touching the net in going over during the service is a ' let ' and the service taken over.

" No. 8. The ring must be caught by only one hand and delivered with the same immediately.

" No. 9. A ring touching net during a rally is playable and is scored against the one who fails to return it.

" No. 10. The ring must not touch the ground during play and must be promptly and continually returned by either side or player until one side fails to return same.

"No. 11. The neutral ground is two feet each side of the net and a player must not stand over the line defining this space. If the ring drops within this neutral ground, the receiving side scores a point.

"No. 12. The server has two serves and serves over a declared 'let'.

"No. 13. The scoring is like tennis: 15 for the first, 15 for the second, 10 for the third, and game for the fourth. In the event of a tie or 'deuce' at 40, two successive points have to be scored by the same side to win the game. A point is scored (*a*) when the server fails to serve a fair ring during two trials; (*b*) when a side fails to return a ring or returns it dropping out of bounds; (*c*) when a ring touches the body other than the hand of the receiver; (*d*) if the ring is returned with an overhand throw."[1]

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[1] "Tenikoit," *American Physical Education Review*, April, 1928, pp. 268-269.

CHAPTER XI.

MEDICAL AND PHYSICAL EXAMINATIONS

ONE aim of physical education is to discover the actual physical condition of the student and to remedy any defects found, if possible. If this is to be done the examination must be thorough and the follow-up of each case done with care.

The medical examination is given to discover disease and functional defects of the organism, while the physical examination is intended to find the functional ability of the individual and also the relations of the body parts for detecting structural defects.

The health of each student is not easily determined. To ascertain functional disorders, structural defects and malnutrition requires conscientious thoroughness on the part of the medical officer and the physical director. This work is a vital part of education, for, if a student is allowed to graduate or spend a number of years in school without any understanding of his condition or without any attempt made to correct defects, the school has failed in an important contribution which it can make to the individual and to the country. Many school children have remediable defects which are a handicap not only to their physical efficiency and health, but also their mental development and which sometimes prevent their graduating. If education is nothing more than "an economical method of assisting an initially ill-adapted individual, during the short period of a single life, to cope with the ever-increasing complexities of the world"[1], its first duty is to see that the body is normal so that the individual is fitted to absorb the knowledge which the school has to impart and to make satisfactory adjustments to life.

The examining medical doctor naturally first seeks to detect symptoms of disease and this is most important. In addition, the following should be examined:—

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[1] Chapman and Counts, *Principles of Education*, p. 11.

Nutrition.

A large number of school boys are malnourished and have low vitality. This is a distinct handicap to learning and to health. There can be no doubt that nutrition is India's greatest health problem. Terman states:[1]

"Nutrition is fundamental for all lines of child development. The stability of the bodily structure is dependent upon the materials that make it up. Malnutrition during the period of growth leaves permanent flaws in the constitution. It is responsible for more degeneracy than is alcohol. Alcoholism is often nothing but a symptom of disturbed nutrition. The greatest problem throughout childhood is that of feeding."

Sir George Newman makes the following statement:[2]

"Sound nutrition is a general physiological condition which connotes a healthy body in all respects and the good tone and health of its various constituent parts, its brain and nervous system, its muscular, digestive, circulatory, and lymphatic systems. All this means that we must take a wide and comprhensive view of nutrition, which is a state revealing itself in a variety of signs and symptoms. Thus in endeavouring to estimate a child's nutrition or its opposite (*viz.*, malnutrition), we must think not only of bulk and weight of body but of ratio of stature to weight; of the general balance and "substance" of the body and of its carriage and bearing; of the firmness of the tissues; of the presence of subcutaneous fat; of the condition and process of the development of the muscular system; of the condition of the skin and the redness of the mucous membranes; of the nervous and muscular systems as expressed in listlessness or alertness, in apathy or keenness; of the condition of the various systems of the body, and, speaking generally, of the relative balance and co-ordination of the functions of digestion, absorption, and assimilation of food as well as of the excretion of waste products. It is obvious that these are data which are likely to lead to a much more reliable opinion than the consideration of any one factor or ratio, however expeditiously obtained or convenient in form or practice, and these data will demand a wider as well as a more careful and accurate observation of the whole physique of the child. Nor can an ultimate opinion always be formed at one inspection at any given moment. For nutrition, like its reverse, malnutrition, is a *process* and not an event. In regard to diagnosis, therefore, the school medical officer has as yet neither an absolute standard of nutrition nor a single criterion to guide him.

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[1] Lewis M. Terman, *The Hygiene of the School Child*, p. 98.

[2] Sir George Newman, *Annual Report of the Chief Medical Officer, Board of Education*, London, 1914.

He must form a considered and careful opinion on all the facts before him."

Statistics for other countries show a large percentage of malnutrition amongst school children. Terman, after showing figures from actual medical examinations from Western countries, estimates that from six to thirty per cent of school children are malnourished.[1] There are no actual figures available for India, but undoubtedly the percentage is high.

One method of judging the nutrition of students is to judge the relation of height, weight and age to the norm. Students ten per cent below the norm are considered underweight. The following tables have been worked out by the author from age, height and weight statistics collected from the schools of the Central Provinces and Berar:—

[1] Lewis M. Terman, *The Hygiene of the School Child,* p. 103.

Age-Height-Weight Table for Hindu School Boys.

Height (inches)	Up to 10 years.	Up to 11 years.	Up to 12 years.	Up to 13 years.	Up to 14 years.	Up to 15 years.	Up to 16 Years.	Up to 17 Years.	Up to 18 Years.	Up to 19 Years.	Up to 20 Years.	Up to 21 years.	Height (inches)
49	49	49·5	51·5	...	...	...	...	...	...	...	...	...	49
50	52	53	53	...	...	...	...	...	...	...	...	...	50
51	53	53	54	55·5	57	...	...	...	...	...	...	...	51
52	54	56	56	57	57	...	...	...	...	...	...	...	52
53	57	58·5	59	59	59	60	60	...	...	...	...	...	53
54	...	61	61	62	62	64	64	...	...	...	...	...	54
55	...	...	62	63	64·5	64·5	64·5	...	...	...	...	...	55
56	...	...	65	66	66	67	69	70·5	...	...	...	...	56
57	...	...	66.5	66·5	67·5	71	72	72	...	...	...	...	57
58	...	...	70	70	71·5	72	74	74	78	...	...	...	58
59	...	...	...	72·5	74	76	76	78·5	81	85	...	...	59
60	...	...	...	78·5	79·5	79·5	81·5	85	85	88	...	...	60
61	...	...	...	...	81·5	85	86·5	86·5	86·5	91	92	101·5	61
62	...	...	...	...	86	88	90·5	90·5	91·5	93·5	96·5	101·5	62
63	...	...	...	...	87·5	92	92	93	94	97·5	102	102	63
64	...	...	...	...	...	93·5	93·5	95·5	99·5	101	102	103·5	64
65	...	...	...	...	...	95·5	96	96·5	101	101	105	105	65
66	...	...	...	...	...	97	100	102·5	103·5	107·5	110	110	66
67	...	...	...	...	...	...	104	104	110	110	110	111	67
68	...	...	...	...	...	...	...	110	110	110	110·5	111	68
69	...	...	...	...	...	...	...	114·5	114·5	118	118	119	69
70	...	...	...	...	...	...	...	...	116	121	121	121	70

The following chart is a comparison of the mean height and weight for each age of Hindu and Mohammedan boys. Mohammedan boys, are slightly taller and heavier than Hindu boys, a condition which is undoubtedly the result of the different diets.

Years.	Mean height (inches.)		Mean weight (pounds.)	
	Hindus.	Mohammedans.	Hindus.	Mohammedans.
10 up to 11 ...	52·2	53·5	55·3	57·5
11 up to 12 ...	53·9	54·3	58·4	59·2
12 up to 13 ...	55·2	56·5	61·5	64·0
13 up to 14 ...	55·9	57·4	65·9	68·2
14 up to 15 ...	59·5	59·7	75·4	75·7
15 up to 16 ...	62·2	62·7	84·0	86·0
16 up to 17 ...	63·3	64·5	91·5	96·4
17 up to 18 ...	64·7	64·8	97·4	100·2
18 up to 19 ...	65·0	65·0	101·5	102·5
19 up to 20 ...	65·5	65·5	105·8	106·6

According to Wood and Rowell:[1]

"Weighing and measuring pupils in school is the easiest and most accurate method of following closely each pupil's health between health examinations; is a definite index of each child's progress from week to week or period to period, such as month to month; reveals sudden changes in weight, which may be the early indication of health disturbance or actual disease process; makes possible comparison of a child with others of his height and age; interests children in their own health."

To calculate normal weight on the table as given for Indian boys, take the age in years on the date of weighing and measuring, disregarding months: that is, consider a boy ten years of age from his tenth birthday to his eleventh. Then find the height on the table, proceeding according to the following method:[2]

Height—60.4 inches = 60 inches.
60.5 inches = 61 inches.

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[1] Wood and Rowell, *Health Supervision and Medical Inspection of Schools*, p. 80.

[2] *Ibid.*, p. 87.

Having the age and height, look up normal weight on age-height-weight table. Put normal weight in column on chart.

To find per cent over or under table weight.—Find the difference between actual and normal. Divide the difference by the normal weight. If the actual weight is less than the normal weight, label the per cent "–". If more than the normal, label the per cent "+".

Example:—

Actual weight = 64 lbs.
Normal weight = 72 lbs.
$72 - 64 = 8$
$8 \div 72 = 11$ per cent.

"Ten to fifteen per cent over the table weight is a good investment for growing children. Twenty per cent or more over-table-weight child probably needs to take more exercise (if there is no physical defect such as weak heart) and eat less sweets . . . . . Seven per cent or more under the table weight needs special attention. Any physical defects should be corrected."[1] These children should be given special advice regarding diet, sleep and general habits.

Vision and Hearing.

We receive most of our impressions of the outer world through the eyes and ears and therefore any defects in these organs are a serious handicap to learning. Defects should be discovered and remedied as far as possible early in school life. Often school children are considered dull when they are not really so, but are handicapped by defective hearing or vision.

Modern civilization makes more demands upon the eyes than has ever been made before in human history. For instance, in our modern life the eye has to adjust to the printed page. Terman[2] states, "In five minutes of reading the eye makes, ordinarily, over one thousand separated movements and as many fixations, each with 'rifle-aim precision.' This is probably as much work as it was earlier required to do in one hour." It is estimated that one-quarter

[1] Wood and Rowell, *Health Supervision and Medical Inspection of Schools*, p. 87.

[2] Lewis M. Terman, *The Hygiene of the School Child*, p. 246.

of the people in Europe and America have defective vision in some form or other.[1] That the figures are probably equally high for India is indicated by the large amount of eye treatment given in hospitals, although the strong sunlight is partly responsible for poor eyes.

Other causes of bad eyes are: (1) poor light at home and in the school, (2) facing windows, doors or artificial light continually while reading, writing or listening to lectures, (3) strain from over-use, (4) glares from white walls or direct sunlight. (5) poor health (the eyes are often the first organs to weaken), (6) dust, (7) diseases of the eye, (8) inherent tendencies to abnormalities.

The eyes of school children should be tested frequently, especially the eyes of those children who are subject to headaches and those who continually hold their books or writing material closer than twelve inches from their eyes. Children with poor eyes should be recommended for treatment and should be seated in the front seats of the school room.

The following is a satisfactory method of testing eyesight and recording results:[2]

A line is first marked twenty feet from the chart.

The boy to be examined toes the twenty foot mark with the maximum light coming from the rear or side, but never from the front.

The vision chart is held as near as possible at the level of the boy's eyes.

A small piece of cardboard is held over the left eye first and he then attempts to read the 20/20 letters.

If unable to read two out of three letters the 20/30 letters should be displayed by the examiner.

If unable to read two out of three 20/30 letters the 20/40 letters should be displayed.

Then wait a few minutes and test the left eye.

Boys wearing glasses should be tested with them on and the teacher should note whether there are defects with glasses.

Scoring system:—

0 is normal, 20/20.
1 is 20/30 but not 20/20.
2X, 20/40 but not 20/30.
3X, cannot read at 20/40.

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[1] Lewis M. Terman, *The Hygiene of the School Child*, p. 245.
[2] Detroit Department of Health. *Instructions to Teachers on the Health Inspection of School Children*, pp. 12-13.

Abnormalities such as cross eye and inflamed eyes and the wearing of glasses should be recorded.

Hearing tests should be given to school children and those with poor hearing should be seated in the front seats of the class room. Often dullness and lack of interest on the part of children is due to defective hearing.

The two most common tests are the whispering and the watch tests. The whispering test is considered the best as the child can guess in the watch test. When whispering is used a uniform whisper must be used throughout the test.

Procedure for testing hearing and recording resuts:[1]

Mark 3 lines on the ground 10, 15 and 20 feet from the spot where the boy is to stand.

Examine first one ear and then the other.

The boy should stand with the ear to be examined toward the examiner and put a finger in the other ear. The teacher examines first at twenty feet as follows: Whisper some instruction such as, "How old are you? or "Raise your right hand," or have him repeat numbers. In using numbers do not use fives and fours.

The boy's response will indicate his acuteness of hearing.

If he is unable to hear at 20 feet move up to 15 feet and if unable to hear at 15 feet move up to 10 feet.

Scoring:

0 is normal, able to hear at 20 feet.

1 is slight impairment. Hears at 15 feet, but not at 20 feet.

2X is evident impairment. Hears at 10 feet, but not at 15.

3X is marked impairment. Cannot hear at 10 feet.

Also record whether the boy has running ears and whether wax is present in excessive quantities.

Teeth and Gums.

It is now known that diseased teeth are the cause of many ills. Sufferers with rheumatism, neuralgia, general debility and other mental and physical handicaps have been cured by having their teeth attended to. Bad teeth undoubtedly cause a large amount of unhappiness and inefficiency.

The temporary teeth have often been considered unimportant because they are lost in childhood. That such a view is wrong has been shown by scientists who have proved that the shape and size of the jaw bones are determined by the development of the temporary set. The care of these

[1] Detroit Department of Health, *Op. cit.*, pp. 14-15.

teeth is as important for health as is the care of the permanent set, as the growth of the permanent teeth is affected if the temporary set is lost too early ; therefore, these teeth should be given the best possible attention and care.

The mouth examination should include cleanliness of teeth, caries and pyorrhea. The examination for cleanliness should be a part of the daily inspection given by the teacher.

Tonsils and Adenoids.

The tonsils are small masses of lymphoid tissue at the back of the mouth or at the entrance to the pharynx, and are situated between the anterior and posterior pillars. When abnormal their function of acting as filters and preventing the entrance of bacterial organisms is interfered with and each gland may be a centre of infection which passes into the blood. Enlarged glands fill the throat cavity and interfere with breathing.

At the upper part of the throat cavity or pharynx there are masses of lymphoid tissue which, when enlarged, are called adenoids. Adenoids make nasal breathing difficult or impossible and are one cause of mouth breathing. They may be a cause of deafness if the eustachian tube, or passage from the upper pharynx to the ear, is blocked.

Enlarged tonsils and adenoids are often a cause of dullness in children as they tend to have a detrimental effect on the brain.

Nose.

An examination to detect mouth breathing, catarrhal discharge and cleanliness is necessary.

Skin.

The skin should be examined for skin diseases such as acne and eczema and for sores, infections and general tone. The symptoms of many diseases are often revealed in the skin.

Heart and Circulatory System

The heart should be examined so that students with weak hearts or leaky valves can be more carefully supervised in their games and other physical activities. If this is not done there is no way of judging whether a boy is fit to participate

in the usual physical activities of the school or not. Simple tests have been devised to test the heart action in relation to exercise. The following Pulse Rate Test for Physical Condition is known as the Michigan test:[1]

" 1. Find the pupil's normal pulse rate.
" 2. Have him run in place for fifteen seconds.
" 3. Find how soon the pulse recovers normal rate.

Time to Recover		Grade	Degree of Fitness	Physical Habits or Type
½ minute	...	A	Fine	Athletic.
1 minute	...	B	Good.	Active.
2 minutes	...	C	Fair.	Moderate.
3 minutes	...	D	Poor.	Sedentary.
Pulse slower after run	...	E	Very poor.	...

" If the pulse is irregular after the run, drop one grade down the scale.

Meaning of the Test.

" No single test of physical fitness can be infallible. This is one of the best for ages thirteen to sixteen and above. Any healthy child should pass high. Any one can do it; only a watch is needed. It is based on the following facts:

" A strong and regular pulse and a prompt recovery to normal rate after an exercise usually go with first-class physical condition; slow recovery indicates lack of training in exercise. When the pulse slows down irregularly after exercise, or when it is slower than normal after exercise, general weakness or some disorder is to be suspected. The following directions must be followed exactly:

How to Make the Test.

" The person to be tested must be well; it should be made just after a quiet period, such as a school session of an hour or more, because the pulse is quickened by exercise and the normal rate cannot then be found. For the same reason it cannot well be made just after a meal or a bath or during any considerable excitement.

To Find the Normal Pulse Rate.

" While the subject is standing quietly, count the pulse for one minute, using the second hand of a watch; be exact. Repeat until the same result is found three times in succession. This repetition is to make sure of accurate counting and sure of quiet condition of the subject. If pulse shows marked irregularity or

[1] A. Floyd Rowe, " Physical Education in the State of Michigan", *American Physical Education Review*, April 1920, pp. 138-9.

is faster than 108 per minute, do not give the running test without advice from a physician.

Running in Place.

"This is done to quicken the pulse, and should be done at the rate of three steps per second, forty-five steps in all lifting each foot to half the height of the opposite knee. The examiner can easily say 'faster,' 'feet higher,' or any other correction needed while the subject runs. Notice carefully the time of stopping.

To Find the Time of Recovery.

"Beginning exactly one-half minute after stopping the run, count the pulse for twenty seconds. Write down the result. Multiply later by three to give rate per minute.

"Beginning exactly one minute after the run stopped, count it again.

"Beginning exactly two minutes after the run stopped, count it again.

"If the pulse is not yet at normal rate, repeat at intervals of one minute until normal rate returns.

"Find the subject's rating in the table above.

"Differences of two four beats per minute may be disregarded.

"If a slower rate is found after the run, in a case where the subject is strong and well, repeat the test from the beginning, as it is likely that the rate found before exercise was for some reason too high and the normal is what is found afterward."

Following are excerpts from *A Test of Physical Efficiency*, by Wilfred L. Foster[1]:—

Method of Taking Test.

"1. Take pulse rate standing for thirty seconds or longer if there seems to be much nervousness. Then record the rate per minute (A).

"2. Have the applicant run in place for exactly fifteen seconds by stop watch, at the rate of one hundred and eighty steps per minute. Then have applicant stop and stand at ease. Take pulse rate immediately for 5 seconds (or for 15 seconds, until the observer becomes more proficient in taking pulse rate and using stop watch). Record the rate per minute (B).

"3. After applicant has stood at ease for 45 seconds, take the pulse rate per minute again. Record the rate per minute (C).

A. "Tests are probably best when made in the morning, so that we may not get the stimulating effects of violent or prolonged exertion.

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[1] Wilfred L. Foster, "A Test of Physical Efficiency," *American Physical Education Review*, December 1914, pp. 632-36.

B. "The rate after exercise is probably the most important factor in this test. The difference between A and B generally shows the efficiency of the circulation during exercise. The greater the difference between the rates before and after the tests, the less the efficiency, other things being equal.

C. "After 45 seconds' rest, the pulse rate should show a lower rate which should approach or nearly reach the rate directly before the test. In fact, in some cases it may go below the "A" rate. The ability to return to the original rate shows the power of recuperation and it may be found to occur even when the rate after the exercise has been higher than the average.

Judging Results.

"1. If the rate before the test is about normal or below it (for hearts with greater reserve power beat more slowly than hearts with less), and if the rate after the exercise of the test does not show an increase of more than 20 to 40, and if the rate after ¾ of a minute rest comes very close to the rate before the test, we may conclude that the applicant's physical efficiency is good.

"2. If the first rate is much higher than normal, if the increase after the exercise is more than 40 and if the rate after rest has not fallen much below the rate immediately after the exercise, the applicant's efficiency at that time would not be considered good. Participation in competitive sports for individual of this type is inadvisable.

"3. Between these good and bad conditions there are many grades, but the principles of judging them are the same.

"The averages of 795 tests of boys (14 to 19):

"Number tested, 795; average rate before test, 95; average immediately after test, 120; after ¾ of a minute rest, 96."

LUNGS.

Detecting cases of tuberculosis is perhaps the most important part of the examination of the lnngs. Students and teachers, especially the latter, are a menace to the health of the entire student body if they have this deadly disease. There should be laws forbidding individuals who have tuberculosis from teaching and there should be special schools for children with this disease. However this may be, the medical examination should be sufficiently thorough to detect this disease.

GLANDS IN THE NECK.

These glands are frequently defective and should be examined thoroughly.

Venereal Disease.

The examiner should look for any signs of venereal disease. This is a precautionary measure necessary to protect all the students in a school and should be done so that the individuals with this disease may take a course of treatment. Often the victim may be cured entirely if the disease is detected in time.

Spleen.

There is such a large number of cases of enlarged spleen in India, due to malaria, that the medical officer should make a special examination of the condition of this organ.

Hernia and Rupture.

The abdominal wall should be examined for these defects.

Nervous Condition.

The general condition of the nervous system should be noted.

Orthopaedic Defects.

The body should be examined for deformities as these often can be corrected by remedial exercises.

Spinal curvature such as kyphosis or outward curvature, lordosis or inward curvature, and scoliosis or lateral curvature should be looked for.

The feet should be examined for fallen arches and incorrect habits of walking.

Ptosis or the falling or drooping of any part of the body should be noted. Viceroptosis or the displacement downward of the viscera is perhaps the most common type of ptosis.

Infantile paralysis and poor general tone of the body should also be recorded.

The physical director can examine the students for many of these defects and should prescribe exercises after consulting the medical doctor.

An examination card listing all the things to be examined is necessary for each student, so that the medical officer will not, through oversight, neglect to examine all the factors listed. This record will enable the headmaster and the Inspector to determine the number of defects of each type and

the number of boys receiving treatment, the number improved or cured and the number not cured. This will be invaluable information to the authorities in judging the health of the boys in each school. The following is a suggested examination card:—

Medical Inspection Form.

Name....................................... Date of Birth.................

Address....................................... School.............................

History of contagious disease

Vaccinated?.................... Father's occupation...................

Number of children in family...

N = normal. O = requires treatment. X = very serious.

Date								
Years in school								
Class								
Height								
Weight								
Nutrition								
Vision R								
Vision L								
Hearing R								
Hearing L								
Teeth and gums								
Tonsils								
Adenoids								
Glands in neck								
Spleen								
Nose								

Skin								
Venereal								
Heart								
Lungs								
Orthopaedic: Kyphosis								
Lordosis								
Scoliosis								
Visceroptosis								
Feet								
Nervous condition ...								
Hernia—rupture ...								
Communicable disease ...								
Other disease								
Miscellaneous								
Excused from physical activities								
Recommended for treatment.								
Referred to corrective class.								
Note to parents ...						P.	T.	O.

The following should appear on the back of the card:—

Record of Results.

Date.	Parents' action.	Medical treatment.	Corrective class.	Results.

The medical examination should be given *at the beginning of the school year* so that defects may be corrected in time

and so that communicable diseases may be under control. A monthly survey of the health of the students should also be made.

The Follow-up of the Medical and Physical Examination.

An examination is practically useless if nothing is done to remedy defects discovered. For that reason the follow-up of the examination is of greatest importance and requires the careful consideration and united action of the doctor, the inspector, the headmaster and teachers. Defects may be classified into three groups:

1. Those of a communicable type, in which the student is not permitted to enter school until the disease is cured.
2. Those requiring medical treatment, but which art not communicable.
3. Those which can be cured or improved by special corrective exercises.

Students in the first group should be sent home and not allowed to return to school without a medical certificate stating that the disease is entirely cured. The responsibility for this rests upon the parents entirely, but they should be advised by the school authorities and doctor regarding the course to be taken to cure the disease. Students with tuberculosis, venereal disease and other communicable diseases should be sent home immediately.

The responsibility for individuals in the second group rests upon the parent and the school. Every effort should be made so that the doctor's prescribed treatment is carried out. This may be done in three ways:—

First, by sending a note to the parents of the child, explaining the defects and giving the doctor's prescription and recommendations. If the parents are too poor to pay for treatment, the second method is to send the boy to a school clinic or other clinic. Every community should have a free school clinic for the treatment of school children, for the use of all school children in the community. Upon the presentation of his examination card or a special note from the headmaster any school child should be given treatment.

The school clinic is coming more and more in use in cities in Europe and America and is urgently needed if students are to receive the treatment which they require.

The third method is the personal interview of the student and parents by the teacher or doctor. The importance of treatment should be stressed.

For students requiring remedial exercises, and those with orthopaedic defects, a special corrective class should be held at the school under the leadership of the physical education teacher who should have special training for his work. This class may meet about once a week and the students be given corrective exercises for home use. As soon as a boy shows improvement he may be excused from this class. Care should be taken not to develop any complexes in the minds of the students regarding their defects. A well-rounded programme should be arranged.

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Chapter XII.

ORGANIZATION OF PHYSICAL EDUCATION IN SECONDARY AND NORMAL SCHOOLS.

A programme of physical education should be organized according to the health and physical needs of the individual. In the process of meeting these needs, the secondary learnings and moral lessons related especially to physical activities should be given particular attention. These are discussed in Chapter I, but the great opportunity offered to educators in training children in fair play, honesty, courage and other desirable qualities through games and other activities cannot be over-emphasized.

The health and physical needs of the individual are many. The first is to be free from structural and functional defects, and the second to be in a healthy condition, that is, to have organic vigour. These two are closely allied, for it is difficult to have the second without the first. An individual, however, may have no defects and yet be in poor physical condition. These needs can only be met by giving the students a thorough physical and medical examination yearly and following up each case requiring supervision and treatment until the defect is cured, if it is curable, and by providing sufficient wholesome exercise daily for all students.

The third requirement is to have habits which are conducive to health and physical efficiency. This is most important, for without habits necessary for healthful living the present and future health of the individual cannot be as sound as it should be. The entire school education programme should have health habit formation as its nucleus ; indeed, the entire school curriculum should be associated with this matter. The school can do much in developing habits of personal cleanliness, good posture and wholesome and regular exercises, and in encouraging hygienic feeding, the getting of sufficient sleep, fresh air and sunshine, regular elimination, healthy mental and moral attitudes and the protecting of the body from infection, as well as providing a healthful school environment.

The fourth need of the individual is to have a fair degree of physical efficiency so that he can handle his body efficiently and enjoy the ordinary activities of life. He should be able to perform the fundamental bodily movements, such as running, jumping, etc., with ease. The body should be under the control of the mind when he is adapting himself to various emotional situations and he should be able to keep cool in emergencies. In physical activities he should be proficient in judging distance, height, speed and time.

Fifth, the individual needs to learn fair play, honesty, self-control, courage and other desirable traits which can be instilled to some extent through physical activities.

Sixth, he needs to know facts about the construction and care of the body. To learn these he should receive instruction in health education during his entire school life, covering the essential facts of personal and group hygiene, first aid, physiology and sex education. Ignorance should not be one of the causes of any one's failure to live at his best.

Seventh, he needs to live in a healthful environment at home, at school and out-of-doors. Such an environment can be created best through education in schools, so that a desirable public opinion is fostered. Although it is difficult to influence the student's home and out-of-school environment, the school surroundings should be free from conditions which may be harmful to his health. The school rooms should be properly lighted ; there should be suitable desks. seats and floors and the walls should be of a light buff colour ; the water supply should be sanitary and also the latrines and urinals ; the blackboards should be of the correct height ; the hostels should be clean and airy and the boys should be segregated according to physiological ages.

A school programme in health and physical education should aim to meet these needs. Colleges and normal schools where teachers are being trained should consider the problem from this point of view. It is no small undertaking, and because of that fact men should be trained to specialize in this subject.

In order to provide an adequate programme in health and physical education the following requirements should be met:—

A physical and medical examination system, paying the

greatest attention to following up each case needing treatment.

A programme in hygienic, corrective and educational calisthenics to develop organic vigour, to correct posture and structural defects and to train in form, precision, alertness, control and co-ordination, this to be progressive and adapted to the various age groupings.

A programme in elementary and major games to strengthen the vital organs, develop motor efficiency, supply wholesome recreation and to develop those mental and moral qualities which can best or can only be developed through games and other activities.

A programme of athletics and self-testing activities including apparatus exercises, to develop motor skill and efficiency in handling the body.

A programme of intra-class and inter-class competitive activities to provide wholesome competition and to develop good sportsmanship.

A programme in personal and group hygiene, physiology, first aid and sex education, arranged progressively for all grades, with special emphasis on the problem of developing health habits. All the courses in the curriculum should be arranged so that they contribute to this work.

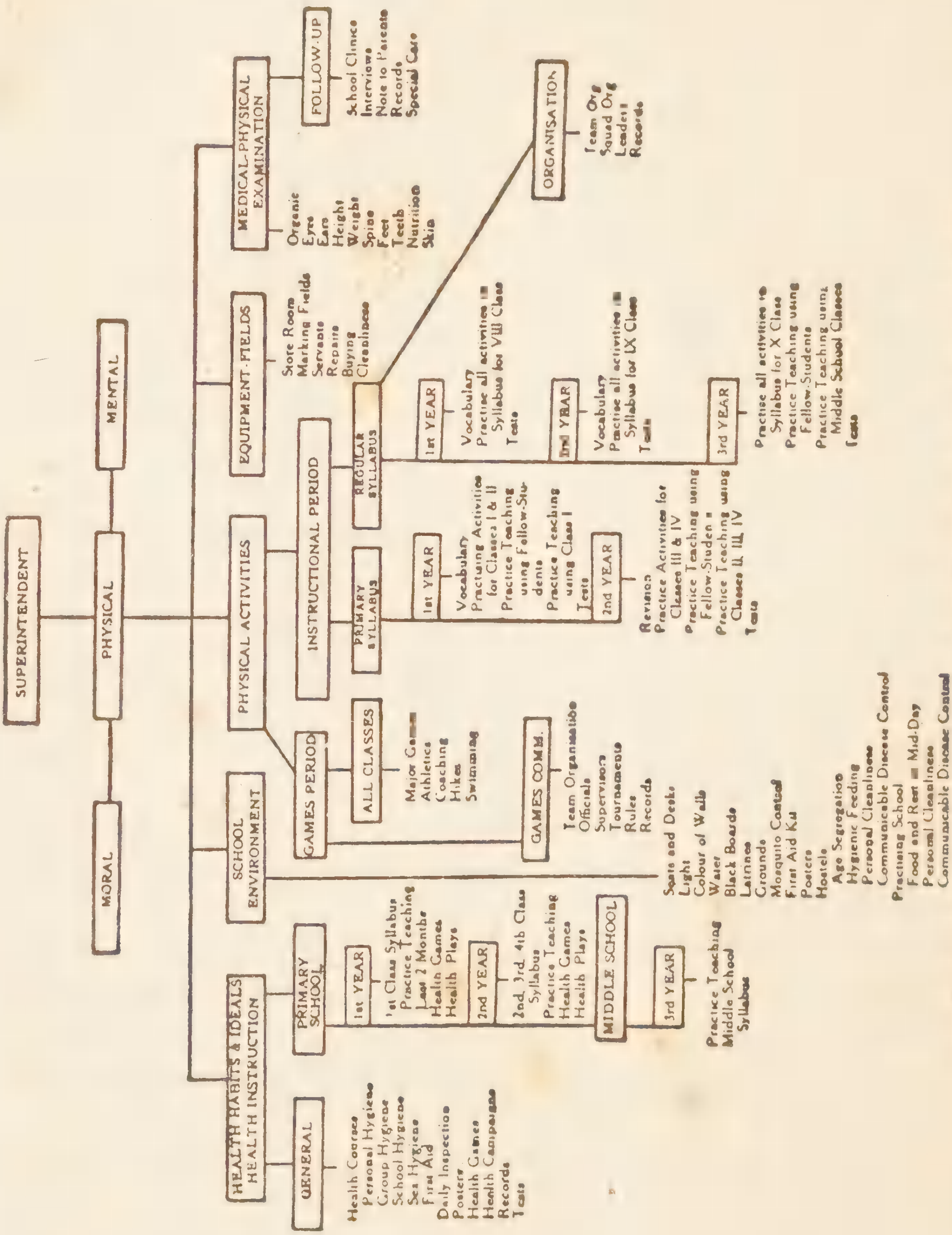
For normal schools, in addition to the above, a programme to train teachers to teach activities for primary and vernacular middle schools.

For normal schools, a programme whereby the teachers are trained to teach the health education syllabus for primary and vernacular middle schools.

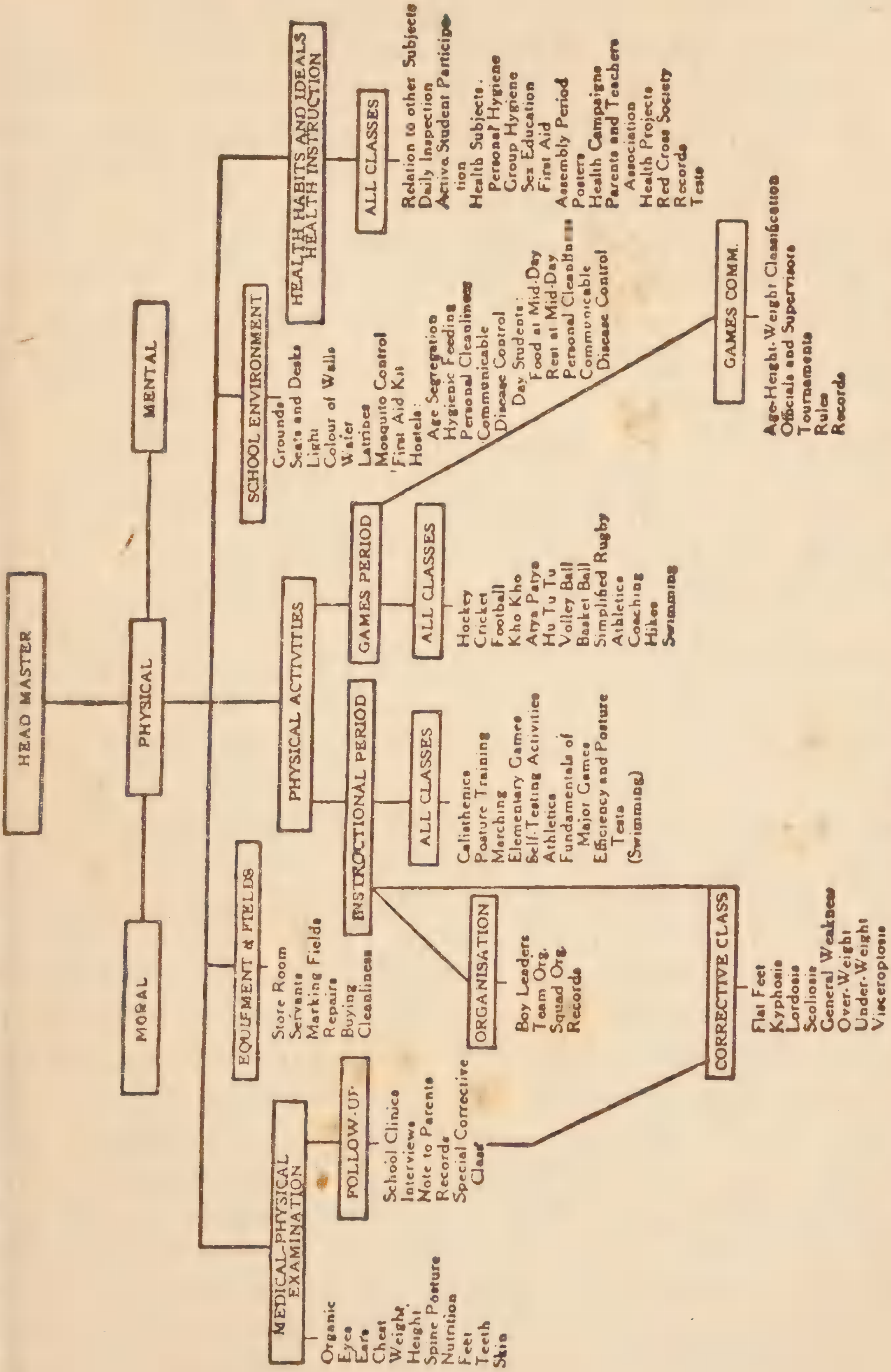
Tests in physical and health education which every student should be required to pass.

A definite system of supervising the general school health problems.

The following charts for secondary and normal schools give a general idea of the field to be covered.



ORGANIZATION CHART FOR NORMAL SCHOOLS.



ORGANISATION CHART FOR MIDDLE AND HIGH SCHOOLS.

Duties of a Physical Education Teacher.

A teacher trained in this subject should be prepared to perform all the special work related to the health of school boys. Obviously, the field is large and requires men who have had detailed training in this branch of education. The first duty of such a teacher is to teach physical activities classes in marching, calisthenics, self-testing activities, athletics and games and to teach the special remedial classes consisting of those students who have flat feet, spinal curvature, visceroptosis and other defects. This work is done during the instructional period and consists chiefly of teaching activities.

Second, he should supervise, coach and officiate the games which are played during the games period. To supervise games does not mean that this teacher should be present during every games period. The physical education teacher should be present during the games periods of the lower classes where coaching is necessary so that the games will be learned properly, but other teachers who are proficient in games should assist with the coaching. All the teachers on the staff should be trained in officiating games and should help with the work.

Third, he should be trained to teach health subjects, such as hygiene, first aid, physiology and sex education. This work is best done by the teacher who is responsible for other health subjects on the curriculum. In most cases a teacher of physical education has a better approach to the students than the other teachers because of the nature of his work and he can apply his teaching in a practical way because of his more intimate contact with the students.

Fourth, he should give the physical examinations and should also assist with the follow-up work of the medical and physical examinations. The follow-up work is exceedingly important and, excepting the remedial work which requires a specialist's attention, should be done by the entire staff.

Fifth, he should assist with problems relating to the general school health. Here again the entire staff must co-operate for desks, seats, lighting, colour of walls, posture, host problems, etc., are a joint responsibility.

Sixth, he should supervise the equipment and fields, seeing that the fields are clean and well-marked and also being responsible for the purchase and repair of equipment.

Last, he should be secretary of the physical education committee and of the games committee, as this work is best done by the individual in closest touch with the health education programme of the school.

Number of Instructors required in Each School.

Because of the intense heat in India at mid-day, it is impossible for one teacher in a school to instruct all the classes in physical activities, which must be held during the cooler part of the day, unless periods are used in the early morning, and this is possible only in normal schools. If each class is to have one period per day for physical activities, excluding the periods during the hottest hours, there must be more than one teacher of physical education on the staff, and these teachers should be able to teach regular theory subjects in order to have full schedules.

Ideally, each school should have one teacher for every ten periods per week given to physical activities, including the games periods of the fifth and sixth classes only.

Number of Periods per Week and Length of Periods.

There should be one period per day for five days of the week for physical activities in middle and high schools. For an active, growing boy this amount of time is the minimum required to develop him physically and to counteract the inactive study periods. This time would not be sufficient if boys were not usually active during some of the out-of-school hours.

For normal schools there should be four periods per week for those activities meant chiefly for the physical development of the students themselves, and two periods per week for primary and vernacular middle school activities, including practice teaching.

In middle and high schools there should be two periods per week for health instruction. In normal schools there should be a minimum of three periods per week.

Each period in physical activities or health instruction should be not less than forty minutes in duration.

Time for Physical Activities.

In normal schools the physical activities instructional classes should be held between 6 and 8 in the morning and games should be played in the evenings. Whenever possible classes in middle and high schools should be held as above. No classes should be held before 3 p.m. except where it is sufficiently cool or where there is abundant shade. Classes should never be held within an hour after a meal.

Clothing to be worn during the Activities Periods.

Students should be compelled to wear shorts and shirts during these periods. This is essential for efficient participation in most games and other physical activities. Clothing like the dhoti is a handicap, as it prevents free movement of the legs.

Students excused from Participation in Physical Activities.

Students with serious structural or functional defects should be excused from the physical activities classes if the Medical Doctor so advises. Such students, however, should be required to take steps to correct their defects.

Use of Boy Leaders.

Boys with physical ability should be selected by the teacher to assist with some of the teaching. For instance, when apparatus exercises, athletics or self-testing activities are being taught, the class may be divided into small groups, each group being under the leadership of a leader. This gives all the boys more practice in the various activities in

the time available, develops boy leaders and is good training in discipline. Following this method does not mean that the leaders do any of the original teaching. The teacher instructs the class in a new activity and later the leaders carry on with their groups, the teacher moving from group to group and giving general supervision.

The Physical Activities Instructional Period.

For the sake of convenience this is called the "drill period," although the term is not correct, since drill implies marching and calisthenics only, while the period covers the whole field of physical activities.

The instructional period in *middle and high schools* should consist of activities as follows:—

8 minutes for marching, running, hopping and skipping.

12 to 15 minutes for calisthenics, including free hand exercises, Indian clubs, wands, lathi and lazium. These should be chiefly hygienic in nature and should be varied from day to day.

17 to 20 minutes for games, athletics or self-testing activities.

The activities in *normal schools* used for the physical development of the students themselves should be the same as above. The periods used for primary school activities during the first two years should consist of—

First year:

Imitative marching.
Story plays.
Elementary and singing games.
Practice teaching.

Second year:

Imitative and elementary marching.
Story plays and elementary calisthenics.
Elementary and singing games.
Practice teaching.

During the third year in normal schools the periods used for vernacular middle school activities should be the same as under middle schools, with the addition of practice teaching.

Practice Teaching in Normal Schools.

First Year—Primary School Syllabus.

The first three months should be used entirely for practising the activities in Classes I and II of the Syllabus.

The remainder of the year should be used for practising the same activities and for practice teaching as follows:—

A. Each student teaches the entire class as follows, the teacher making corrections and offering suggestions and grading each student on (1) voice, (2) knowledge of commands, (3) appearance, and (4) presentation:—

Marching.—Each student teaches one to two movements. When able to do this he is given an assignment of three or four movements to teach when called upon, such as:

Marking time with clapping hands.
Facing.
Marching around the field.
Simple movements while marching.

Story plays.—

First, practice in teaching mimetic exercises is given.
Second, each student teaches one or more story plays.

Games.—Each student receives as much practice as possible in teaching games.

B. After all the students have taught, the class is divided into three or four groups. Each student teaches his group in turn, the teacher grading him as explained above, in A. When the student has finished, another takes his place. Using the group method—

(1) Practice teaching in each separate activity is given. After the student finishes his assignment his group discuss the lesson for a few minutes. The teacher moves from group to group and during the discussion offers suggestions.

(2) Each student teaches the activities of an entire lesson, beginning with imitative marching, then one story play and one game. The lesson lasts for 15 minutes only, giving less time for each activity than is usually taken in a regular class. The group discussion method is followed.

C. Each student teaches an entire lesson of forty minutes.

Second Year—Primary School Syllabus.

A. The activities of Classes I and II are revised.

B. Each student teaches four practice teaching lessons, using primary school classes and teaching two lessons to Class I and two to Class II.

C. After a preliminary practice of activities for Classes III and IV the following is done—

(1) Teaching an entire class:

Marching.—First, each student teaches one or two movements at a time as given in the Syllabus for Classes I and II. All the students are given some practice in this way during each lesson. They learn how to give the preparatory command and the command of execution ; how each movement is executed in detail ; and the proper method of presentation. The teacher grades each student as done in the first year.

Second, when able to teach separate movements correctly the students are given assignments of four or more movements to teach.

Calisthenics.—Each student teaches about four exercises in rhythm, emphasizing the correct positions and good posture. He learns the different movements and how to teach them with proper commands.

(2) After practice teaching using the entire class the class is divided into groups with a leader in charge of each group. Practice teaching is first given in each activity separately, in marching, then calisthenics and story plays and games. A number of students are given practice teaching during each period in each group. The group discussion method is used, the teacher marking each student.

With the class divided into groups each student teaches an entire lesson for Classes III and IV. In Class III story plays may be substituted for calisthenics at times. For Class IV marching, calisthenics and games are covered.

(3) Practice teaching using primary classes is given. Each student teaches four lessons: two for Class III and two for Class IV.

Third Year—Vernacular Middle School Syllabus.

The activities for Classes V, VI and VII are used during the third year.

A. Practice within the instructional class period is given. Most of the time is used for practice teaching and a record kept of each student's progress.

(1) During the first four months each student teaches, two or three at a time, the fundamental activities related to each of the following, the teacher correcting and discussing each student's work:

Marching.
Calisthenics, using order and rhythmical commands.
Self-testing activities and athletics.
Elementary games.

As soon as the students are grounded in the fundamentals, the class is divided into small groups with a student leader for each.

When the leader finishes his lesson it is discussed by the group and then another student becomes leader. All the groups work at the same time and the teacher moves from group to group, giving helpful suggestions and criticisms. Each student teaches the following:

Two or more calisthenics lessons.
Two or more marching lessons.
Five different self-testing activities and athletic activities.
As many elementary games as possible: at least five.

(2) During the last four months each student teaches three or more entire lessons of 40 minutes, including marching, calisthenics and self-testing activities or games.

(3) During the third year each student receives practice in officiating games.

B. Each student is required to teach three or more lessons to vernacular middle school classes and to write out a lesson plan for each.

Team Organization during the Instructional Period.

The students in each class should be divided into teams of 8 to 12 boys according to the size of the class. There should be at least four teams in each class and they should be chosen as follows after the teacher has a general idea of the ability of the students:—

The teacher chooses as many of the best athletes in the class as there are teams to be formed. These boys choose players until the entire class is sub-divided. If there are four boys choosing, Number 1 selects one player, then Number 2, Number 3 and Number 4. Instead of Number 1's choosing next, Number 4 chooses again, then Number 3, Number 2 and Number 1, and then Number 1 chooses again, until all the boys are divided into teams. Each team then selects a captain.

A schedule of competition can now be drawn up. This should consist of simple games, relay races, group appearance, posture, athletics and self-testing activities. No team should compete more than once a week.

A careful record, such as the following, should be kept of each team's score:—

	Group A.		Group B.		Group C.		Total		
	Points scored	Fair play	Points scored	Fair play	Points scored	Fair play	A.	B.	C.
April 7. Dodge ball ...									
Relay race ...									
April 11. 60 yards dash ...									
Appearance ...									
April 16. Long jump ...									
Posture ...									
Etc.									

The teams should be marked as follows:—

First place	...	...	5 points.
Second place	...	...	3 points.
Third place	...	...	1 point.
Fair play	...	...	1 point.

In the relay races, if one member of a team runs before he is touched or if he cheats in any way, his team is disqualified and receives no points whatever. The same rule should be followed in all activities. When the students have learned the idea of fair play the fair play marks need not be used.

Squad Organization during the Instructional Period.

Each class should be divided into squads of 6 or 8 boys when self-testing activities or athletics are being taught.

This may be done in three ways: first, the students simply count off in the required number daily, thereby mixing the good and poor performers ; second, the class is divided into permanent squads with the good and poor performers mixed ; third, the class is divided into A, B, C, etc., groups, the A squad being the best performers, the B second best, etc. The first method should be used with a new class. After sufficient training either of the other two methods may be used. In the third method the idea is to encourage the boys in the lower groups to improve so that they may become members of the next best squad.

Special Corrective Classes for Boys with Remediable Defects.

Students with defects such as kyphosis, lordosis, scoliosis, flat feet, visceroptosis, etc., but but normal otherwise, that is, with no functional defects, should enter a special class once a week to practise remedial exercises and to learn corrective exercises for home use. These students should be excused from one of the regular activities periods. As soon as they show marked improvement they may leave the remedial class and take the regular work of the activities period from which they were excused.

Team Organization for Major Games.

Inter-school competitive activities should not be emphasized as they tend to concentrate attention on a small group of outstanding athletes at the expense of the majority of mediocre players who usually become spectators. The greatest attention should be given to the majority and because of this intra-school activities should be stressed. In these all students participate and receive the benefits which are enjoyed by a select few in inter-school competition. Inter-school competition is valuable in its way and should be included on the programme of physical activities, but it should not interfere with activities which are best for the student body as a whole.

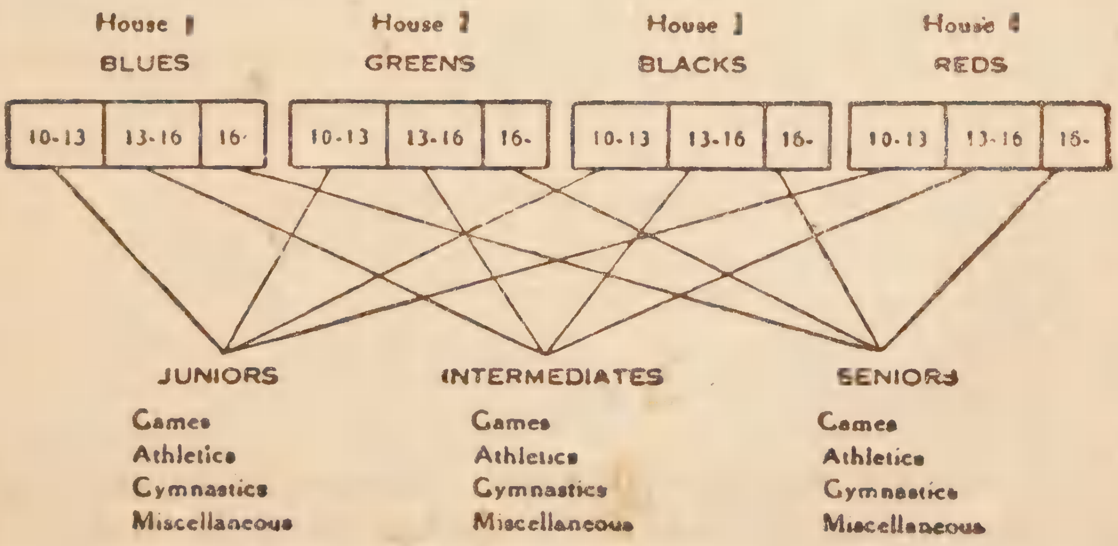
Intra-school competition should be between teams of boys of as nearly equal size and age as possible. In order to make this possible the entire school must be sub-divided

into groups so that competition may be held within each division. Two of the many methods of doing this are as follows:—

1. The mixed age group or "House" system. In this all the boys in the school are divided in groups or "houses", each including boys of all ages. Each "house" is divided into age, height or weight groupings, or a combination of the three and, although each "house" is considered a unit, the competition is between the similar teams in all the "houses". For instance, if the boys are divided into teams according to age, the teams consisting of boys between the ages of ten and thirteen in all the "houses" have their own competitive programme, and similarly boys between the ages of thirteen and sixteen and those sixteen years of age and over have their respective programmes. All teams in a "house" play for the "house" and not for themselves as a team, the idea being to see which "house" can secure the highest number of points at the end of the season. Every boy in this system takes part in some form of competitive activity.

This system must not be understood to mean that boys of widely varied ages should live together in a hostel. It is simply one way of grouping students for competitive activity and is valuable chiefly in that the students have a wider opportunity for co-operation and unselfishness than is afforded by a team alone.

The plan is as follows for a school divided into four "houses" and three divisions:—



2. The entire school may be divided into three or more divisions according to age, height or weight, or a combination of these, and competition held within each division which is sub-divided into teams for the various activities. Each team in this case is a unit as it is not connected with a "house" or class. The school may be organized into divisions, as follows:—

According to age—

Juniors	...	...	Ages 10 to 13.
Intermediates	...	...	Ages over 13 and under 16.
Seniors	...	...	Ages 16 and over.

or

Juniors	...	...	Ages 10 to 15.
Seniors	...	...	Ages over 15.

According to height—

Group I	...	...	Over 5′ 2″.
Group II	...	...	5′ 2″ and under.
Group III	...	...	4′ 10″ and under.
Group IV	...	...	4′ 6″ and under.

According to weight—

For division into three groups:

Group I	...	...	60 to 95 pounds.
Group II	...	...	96 to 125 pounds.
Group III	...	...	Over 125 pounds.

For division into five groups:

Group I	...	...	60 to 80 pounds.
Group II	...	...	81 to 95 pounds.
Group III	...	...	96 to 100 pounds.
Group IV	...	...	111 to 125 pounds.
Group V	...	...	125 pounds and over.

Combinations of age, height and weight—

Age × weight × height.
Weight ÷ height × age.
Height × age.
Height × weight.
Age × weight.
Weight ÷ height.
Height ÷ age.
Weight ÷ age.

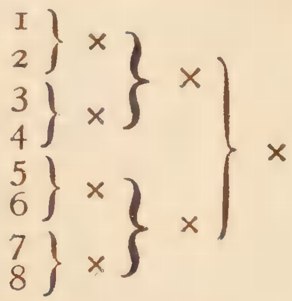
When the answers are obtained, the lowest figure is subtracted from the highest figure. The result is divided by

the number of divisions desired to find the range of each. In using the age × weight × height method, for instance, the results may vary from 2,000 to 12,000. The ranges for three divisions would then be 2,000 to 5,333, 5,333 to 8,999 and 8,999 to 12,000.

Methods of Arranging Games Schedules

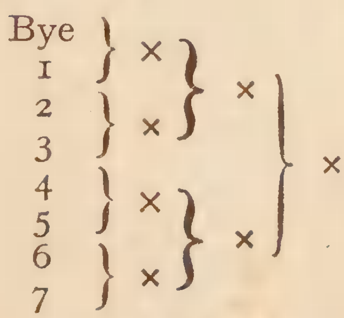
1. *Elimination or "knock-out" method.*—In this the winners continue playing in the tournament while the losers are eliminated.

When there are two teams or a power of two, such as four, eight, sixteen, etc.. the schedule is as follows:



If there were twelve teams, twelve would be subtracted from the next highest power of two, namely, sixteen, making four "byes".

When the number of teams is not two or a power of two, one or more teams are given "byes" during the first round, that is, they do not play during the round, so that the second round will have two or a power of two teams competing. To determine the number of "byes", the number of teams or entrants is subtracted from the next highest power of two. In the following there are seven teams. The next highest power of two is eight. The difference is one and there is therefore one "bye".



When there is an even number of "byes" half are put at the top and half at the bottom of the first round. When

there is an uneven number the smallest number is put at the top ; for example, of five "byes" two would be put at the top and three at the bottom.

The teams are matched by drawing lots and the names of the teams and dates of play filled in on the form.

2. *The round robin method or the league system.*—In this type of tournament each team plays every other team. The following are the best methods of arranging teams and rounds for this type of tournament:—

When there is an even number of teams, start with number 1 which remains stationary while the other numbers revolve from left to right until the original combination is reached, as follows:—

Rounds.	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.
	1-2	1-8	1-7	1-6	1-5	1-4	1-3
	8-3	7-2	6-8	5-7	4-6	3-5	2-4
	7-4	6-3	5-2	4-8	3-7	2-6	8-5
	6-5	5-4	4-3	3-2	2-8	8-7	7-6

With an uneven number of teams all the numbers revolve from left to right and the top number draws a "bye", as follows:—

Rounds.	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.
	7	6	5	4	3	2	1
	6-1	5-7	4-6	3-5	2-4	1-3	7-2
	5-2	4-1	3-7	2-6	1-5	7-4	6-3
	4-3	3-2	2-1	1-7	7-6	6-5	5-4

The standing or percentage of each team may be figured by dividing the number of games won by the total number of games played. Winning all games gives a score of 1,000 per cent.

Another method is to give two points for every game won and one point for every draw.

The games schedule should be printed as follows.—

Teams	First Round.			
	Date	Time	Field	Official.

The Track and Field Tournament.

The organization of this type of tournament requires real organizing ability, for there are innumerable details to be attended to before the meet, and much tact and good judgment are needed during the tournament in handling officials and seeing that everything runs off smoothly. The following must be considered by the organizer of such a tournament:

1. Schools or individuals entering the tournament.

The first thing to do is to send out entrance forms, rules and special announcements. The entrance form should be worded somewhat as follows: "Kindly enter the following individuals in the events indicated. They are eligible to participate according to the rules of the . . . . Athletic Association."

The rules and requirements for participation should be understood by all schools or individuals participating in the meet and may be as follows:—

Eligibility rules: An entrant:—

Must be physically fit to participate.

Must have attended the school for at least one month before the tournament.

Must have a satisfactory scholastic standing.

Must be an undergraduate.

Must be an amateur. Amateur standings: "An amateur athlete is one who participates in competitive physical sports only for the pleasure, and the physical, mental, moral, and social benefits directly derived therefrom."[1] This means that he does not compete under an assumed name nor receive money directly or indirectly for physical or athletic competition or instruction. Professionalism should be kept out of all school sports.

Number allowed in each event:

For inter-school meets with more than two schools competing, each school should be allowed to enter three boys in each event, not including the relay race and tug-of-war.

Height classifications for participation:

Grade I ...	... Height over 5′ 2″.
Grade II ...	... 5′ 2″ and under.
Grade III ...	... 4′ 10″ and under.
Grade IV ...	... 4′ 6″ and under.

[1] Report of the Committee on "*Definition of an Amateur*", *American Physical Education Review*, February, 1915, p. 66.

Events for each height grouping:

Group I.	*Group II.*	*Group III.*	*Group IV.*
100 yd. dash.	100 yd. dash.	75 yd. dash.	50 yd. dash.
200 yd. dash.	220 yd. dash.	100 yd. dash.	75 yd. dash.
440 yd. dash.	120 yd. 3′ hurdles.	75 yd. 2′ 6″ hurdles.	High jump.
880 yd. dash.	Relay race (220 yds. each contestant.)	High jump.	Long jump.
One mile race.	High jump.	Long jump.	Shuttle relays.
220 yd. high hurdles.	Long jump.	Hop-step-and-jump.	4 potato race.
110 low hurdles	Pole jump.	Relay race. (100 yds. each contestant.)	Line relays (see Chapter VIII).
Relay race.	8 lb. shot put.		Hop-step-and-jump.
High jump.			
Long jump.			
Pole jump.			

Group I.	*Group II.*	*Group III.*
12 lb. shot put.	Cricket ball throw.	Cricket ball throw.
Cricket ball throw.	Hop-step-and-jump.	Continuous relays (see Chapter VIII).
Tug-of-war		Shuttle relays (see Chapter VIII).
Discus throw.		8 potato race.
Javelin throw.		
Hop-step-and-jump.		

Events in which each person is allowed to participate:

No race over the 220 yard dash should be held for boys under sixteen years of age.

No race over the 880 yard dash should be held for school boys.

There should be no heats in the 440 and 880 yard dashes on the same day or on the day before the final race.

Contestants may enter no more than three of the following:

50 yard dash.	Shot put.
100 yard dash.	Cricket ball throw.
220 yard dash.	440 or 880 yard dash.
High jump.	High hurdles.
Long jump.	Low hurdles.
Pole jump.	

No boy should be allowed to compete in more than one race of more than 220 yards on the same day.

The relay race and the tug-of-war are open to all, whether or not they participate in other events, with this exception: that a runner participating in a race of more than 220 yards may not take part in a relay race in which each contestant runs more than that distance.

Rules of sports:

The International Olympics Rules should be followed and the essential points regarding each should be printed and distributed amongst the schools.

Special announcements and rules·
  Time of meet.
  Place of meet.
  Arrangements on the field for the different schools.
  Time for weighing competitors. Late competitors disqualified.

2. What to do with list of entries.

The names of the competitors for each event for each age grouping with the names of their schools and the number of each contestant should be typed and duplicate copies of each made.

3. Forms for recording results.

Form for events with heats:—

Event.................................... Date..........................

	Preliminaries			Semi-Finals			Finals			
	No.	Name	Time	No.	Name	Time		No.	Name	Time
1st heat.										
1										
2										
3							1st			
2nd heat.										
1										
2										
3							2nd			
3rd heat.										
1										
2										
3							3rd			
4th heat.										
1										
2										
3										
5th heat.										
1										
etc.										

Scorer...
Heat Timer...

Form for shot put, long jump, cricket ball throw, etc.:—

Event.. Date...........................

No.	Name	School	1st trial	2nd trial	3rd trial	Extra trial	Extra trial	Winners
								1st
								2nd
								3rd

Distance....................Scorer....................Head Judge................

Form for the pole jump and the high jump:—

Event.. Date...........................

No.	Name	School	Heights	Winners
				1st
				2nd
				3rd

Height....................Scorer....................Head Judge................

Form for competing the final score:—

Name of School	100 yd. dash	220 yd. dash	High jump	Long jump	Pole jump	Etc.	Total Points

Note.—Points are as follows:

5 points for 1st place.
3 points for 2nd place.
1 point for 3rd place.

4. Securing officials and assigning their duties.

The success of the tournament depends greatly upon the officials. They must be chosen wisely, and it is a fallacy to select men who know nothing about sports. The individual's permission should be secured before printing his name as an official.

Every community should gradually train a group of officials who can be called upon annually to assist with this work. Each official should understand his duties thoroughly, particularly the rules for the particular sport which he is officiating. The special rules for each sport should be printed on separate sheets for the convenience of the official. These may be used from year to year.

The official Olympics Rule Book should be available during the conduct of each event.

5. Duties of officials (standard rules):—[1]

The Games Committee.

"This Committee shall provide a place properly laid out and measured to conform to all the requirements of these rules and shall also furnish all implements and equipment necessary for the

[1] H. C. Buck, *Rules of Games and Sports*, pp. 149-53.

satisfactory competition of the events scheduled in the official programme, and shall have jurisdiction of all matters not assigned by these rules to the Referee or other games officials."

Referee.

"The Referee shall enforce all the rules and decisions and shall decide all questions relating to the actual conduct of a meeting, the final settlement of which is not otherwise assigned by said rules."

Inspectors.

"It shall be the duty of an Inspector to stand at such point as the Referee may designate; to watch the competition closely, and in case of a foul or violation of the rules by a competitor or other person, to report to the Referee what he saw of the incident."

"Such Inspectors are merely assistants to the Referee, to whom they shall report, and have no power to make any decisions."

Judges at Finish.

"There shall be four or more Judges at Finish, who shall decide the order in which the competitors finish in the competition. In case of a disagreement, the majority shall decide. Their decision as to the order in which the men finish shall be final and without appeal. When possible, Judges shall stand at least six feet back from, and in line with the finish."

Field Judges.

"The Chief Field Judge shall see that all implements and equipments are in accordance with these rules and that the field events are conducted expeditiously.

"The Field Judges shall measure, judge and record each trial of each competitor in all games, whose record is of distance or height. Their decision as to the performance of each man shall be final and without appeal.

"In the javelin, hammer and discus competitions a distinctive flag shall be provided with which to mark the throws of each competitor, and a special flag to mark the existing world's record."

Time-keepers.

"Each of the three Time-keepers shall time every event. In case two of their watches agree, and the third disagrees, the time marked by the two shall be the official time. If all watches disagree, the time marked by the watch giving the middle time shall be the official time. Time shall be taken from the flush of the pistol.

"Should assistants to the Time-keepers be provided, they shall perform like duties, but the time recorded by their watches shall only be accepted in the event of one or more of the watches held by the other Time-keepers failing to mark the time, in which case they shall be called upon in such order as may be previously decided

upon, so that on all races, where possible, three watches shall record the time.

"If, for any reason, only two watches record the time of an event, and they fail to agree, the longest time of the two shall be accepted as the official time."

Clerk of the Course.

"The Clerk of the Course shall be provided with the names and the numbers of all entered competitors, and he shall notify them to appear at the starting line before the start in each event in which they are entered.

"In case of handicap events from marks, he shall place each competitor behind his proper mark; shall immediately notify the Starter, should any competitor attempt to advance himself after the Starter has warned them to 'get ready'; and in time allowance handicaps shall furnish the Starter with the number and time allowance of each actual competitor. He shall control his assistants, and assign to them such duties as he may deem proper. In all track competitions run in lanes the choice of lanes shall be drawn for in each heat; in all other track competitions the positions shall shall be numbered from the curb or pole and shall be drawn for according to clubs in scratch events, and in handicap events the competitors shall be allotted their positions by the Clerk of the Course.

"After the Clerk of the Course has reported to the Referee the number of men ready to start in the trial heats of a race and the Referee has designated the number of men to compete in each heat and the number of heats to be run as well as the number to qualify in the final, additional men shall not be permitted to start."

Scorer.

"The Scorer shall record the order in which each competitor finishes his event, together with the time furnished him by the Time-keepers, and the height or distance furnished by the Field Judges. He shall keep a tally of the laps made by each competitor in races covering more than one lap, and shall announce by means of a bell, or otherwise, when the leading man enters the last lap. He shall control his assistants, and assign to them such of his duties as he may deem proper."

Press Stewards.

"Press Stewards shall obtain from the Clerk of the Course and Scorer the names of all starters in each event, the names of all point winners, and the times or distances of each winning or record performance, and keep the press thoroughly informed of all doings of the meeting."

Official Surveyor.

"The Official Surveyor shall survey the track and all courses for

the distances which are to be contested and furnish a statement of same to the Games Committee or Referee before the games."

Marshal.

"The Marshal shall have full police charge of the enclosure and prevent any but officials and actual competitors from entering or remaining therein. He shall control his assistants and assign to them their duties."

Starter.

"The Starter shall have entire control of the competitors at marks, and shall be the sole judge of fact as to whether or not any man has gone over his mark.

"All races shall be started by the report of a pistol, except that in time handicap races the word "Go" shall be used.

"All questions concerning the start shall be decided by the Starter.

"When any part of the body of the competitor shall touch the ground in front of his mark before the starting signal is given, it shall be considered a false start.

"If, in the opinion of the Starter, a false start has been made, he can recall the competitors by a second pistol shot, and penalise the offender or the offenders, as follows:—

"For all races up to and including 125 yards, the competitor shall be put back 1 yard for the first and another yard for the second attempt; in races over 125 yards and including 300 yards, 2 yards for the first and 2 yards for the second; in races over 300 yards and including 600 yards, 3 yards for the first and 3 yards for the second; in races over 600 yards and including 1,000 yards, 4 yards for the first and 4 yards for the second; in races over 1,000 yards and including 1 mile, 5 yards for the first and 5 yards for the second; in all races over 1 mile, 10 yards for the first and 10 yards for the second. In all cases the third false start shall disqualify the competitor from the event. In relay races the penalty shall be according to the distance the offender is to run in the race.

"The Statrer shall also rule out of that event any competitor who attempts to advance himself from his mark, as prescribed in the official programme, after the Starter has given the warning to 'get ready'.

"The Starter must have at least two good cartridges in his pistol before starting a heat.

"Should the Starter have occasion to warn the competitors on any point, he shall order the competitors to 'stand up'."

Official Announcer.

"The Official Announcer shall receive from the Scorer the result of each event and announce the same by voice or by means of a bulletin board."

6. Order of events.

A list of events in their proper order with a time limit for each should be prepared. Every effort should be made to keep within the time schedule ; otherwise it may be impossible to get through the events scheduled.

The order of events should be prepared carefully so that the competitors are not overworked and so that time is not lost. There should not be two or more successive races for the same age grouping. The hurdle races should not come directly after the dashes nor the dashes directly after the hurdle races as this involves loss of time waiting for the hurdles to be placed on the track or removed from it.

7. Marking fields and arranging equipment. (See Chapter XIII.)

This task involves a great deal of work where there is no permanent athletic field with adequate equipment. In marking provision must be made for the following:—

Running track.
Lanes for dashes.
Start and finish of all races.
Boundaries of field.
Hurdle marks
Long jump.
High jump.
Pole jump.
Shot put.
Hammer throw.
Javelin throw.
Cricket ball throw.
Tug-of-war.
Area for relay races.

In addition to equipment for all of the activities scheduled, the following must be provided:—

Bantams.
Stopwatches.
Finishing tape.
Score board.
Measuring tape.
Flags.
Megaphone.
Scorer's table.
Special seating arrangements.

Pits must also be dug for the jumping events and sand provided.

8. Measuring contestants.

A time limit should be designated, before which contestants should be measured or weighed for the meet, especially in meets consisting of different age groupings. This is not necessary in adult tournaments. Height measurements are usually used for the classification of boys.

Special Tournaments.

The idea that competitions can be held only in athletics, major games, wrestling, boxing and a few other activities is wrong. Tournaments may be held between teams, classes or schools, using only relay races. In this case each team consists of from eight to ten players and the competition is between teams instead of individuals. All members of a team participate in each event. The team score is kept, five points being received for first place, three for second and one for third. See Chapter VIII for this type of activity.

Example of score sheet:—

Teams	2 potato race	Tunnel relay	Continuous relay	Fireman's carry	Etc.	Total score
Team A.						
Team B.						
Team C.						
Etc.						

A team receives no points if one of its members plays unfairly.

The above type of competition may also be had in athletics and other activities in which the total team score is recorded, as follows:—

Standing long jump.—All the teams stand behind the starting line. The first boy in each team makes a jump and the distance is marked on the ground. The second boy stands behind the mark made by the first jumper and jumps forward and the distance marked will be the total of the two jumps. Then the third boy jumps from this mark and the jumps are thus continued until all the boys have jumped. The idea is to see which team can make the longest total jump forward.

High jump—Add all the jumps.

Shot put—As for the long jump.

Races—As for relay races.
Cricket ball throw—Add all throws.
Dips—Add number of dips made.
Three standing long jumps—As for long jump.
Hop-step-and-jump.—As for long jump.
Basketball overhead throw—As for long jump.
Vaulting for height—Add all the vaults.

Appearance—First, second and third marks are given according to neatness.

Posture—First, second and third marks are given according to ability to stand in good posture.

Apparatus exercises—Each boy's performance is marked on the basis of ten: 2 points for the approach, 6 points for execution and 2 points for dismount and finish. Exercises may be used on the parallel bars, high and lo wbars, Roman Rings, etc.

Tumbling—As for apparatus exercises.

Pyramid building—The best pyramid receives first place, the next best second, and the third best third.

Tests.

A programme of physical activities can never be entirely successful unless the students are required to achieve certain standards of ability. In judging physical ability, habits and mental traits the following should be considered: (1) posture and freedom from defects ; (2) physical skills ; (3) performance ability ; (4) habits and mental traits which may be the result of the activities programme ; and (5) general factors related to physical activities. All of these tests cannot be given at the end of the school year. They should be the result of the entire year's work, but tests should be given at the beginning of the year so that the degree of progress can be determined. Motor ability tests should include the fundamental movements, such as running, jumping, throwing, climbing, vaulting, swinging, etc., and also the fundamentals of games. A record should be kept for each student. Results should be judged chiefly by individual improvement during the year, although the student's ability should also be compared with a standard for boys of his age and height.

(1) Posture and freedom from defects:

Can stand, sit and march in good posture.

Knows a few remedial exercises to correct any physical defects he may have, such as flat feet, kyphosis, lordosis, visceroptosis, etc., and shows improvement or is cured of defect. Also shows improvement or is cured of any functional disorders or shows that he is taking proper treatment.

(2) Physical skills:

Is able to handle the weight of his body in vaulting, swinging, travelling, climbing and dipping.

Is able to mount from a run and dismount with a fair degree of form and proficiency.

Is able to run in good form.

Can do a crouching start.

Can do a standing or running long jump properly.

Can hurdle over a stick properly.

Can high jump with ease.

Can pole jump with a fair degree of proficiency.

Can put the shot correctly.

Can throw and catch a ball properly.

Can dribble, stop and kick a football properly.

Can dribble, stop and strike a hockey ball properly.

Can swim.

In marching and calisthenics responds to commands properly and performs the movements in good form and proper rhythm.

(3) Performance ability:

If the student's performance record in the following activities is below the average for his particular age he should show progressive improvement until the time of graduation:—

Standing long jump.

Running long jump.

Running high jump.

Dips on the parallel bars.

Pull-ups on the high bar.

Rope climbing for height.

Vaulting for height.

100 yd. dash.

8 lb. shot put.

Swimming 40 yards.

Dribbling a football from the centre of the field to the centre of the penalty area and kicking a goal. 3 trials.

Dribbling a hockey ball to striking area and striking a ball between goal posts. 3 trials.

(4) Habits and mental traits:

Has a good record for cleanliness and neatness.

Can perform on the apparatus two exercises which require courage.

Has a play or exercise hobby, such as tennis, wrestling, walking, football, hockey, basketball, swimming, etc.

Is seldom a 'poor sport'.

Plays fair and hard and works for his team, not for himself.

Keeps his temper in games.

Holds his body erect and straight.

Keeps himself fit by eating, sleeping and exercising normally.

(5) General:

Is a member of a team in intra-school activities.

Has attended at least 90 per cent of all the physical activities periods throughout the year unless exempted because of poor health.

Tests for All-around Ability.

There are activities which test the ability of the individual and which at the same time are a form of competition between individuals. Activities of this type are excellent in testing the physical skill of each student throughout the school year. An individual record is kept for each student and he is marked on the basis of ten in posture, appearance and apparatus exercises, and according to the test score sheet for other activities. The following is a test for all-round ability:—

Triple posture test.
Running form. 1 trial.
50 to 100 yard dash, for shortest time. 1 trial.
Cricket ball throw, for distance. 3 trials.
Standing long jump, for distance. 3 trials.
Vaulting over 3′ 4″ bar, for form. 1 trial.
Swinging on parallel bars, for ability to swing with ease. 1 trial.
Climbing, using climbing rope, for height. 1 trial.
Hockey ball dribble, 50 yards, for form. 1 trial.
Football dribble, 50 yards, for form. 1 trial.
Throwing and catching, 12 yards apart. 1 trial.

Much of the grading in this test depends upon the teacher's judgment of the skill of the individual. Teachers with experience are required for this, as the technique of the various activities must be understood In determining the grade to be given, such factors as form, grace, accuracy and ease of movement are considered. Boys who have not practised

or who are awkward can be easily detected. If these backward students know what will be expected of them at the end of the year they will undoubtedly work harder and show gradual improvement.

It can readily be seen that it is possible to test boys in physical activities as well as in other subjects on the curriculum. Such testing is necessary if definite objectives are to be attained.

The Athletic Badge Test for Boys.

This is a test of development and physical efficiency used in the United States and takes the form of competition against standards instead of against individual rivals.

"First test.

1. Pull-up (chinning)—4 times ; or
   Rope climbing (using both hands and legs)—12 feet.
2. Standing long jump—5 feet, 9 inches.
3. 60 yard dash—9 seconds ;or
   50 yard dash—8 seconds.
4. Cricket ball throw (distance)—130 feet.
   (*Note.*—A baseball is used in the original test.)

"Second test.

1. Pull-up (chinning)—6 times ; or
   Rope climbing (using both hands and legs)—16 feet.
2. Standing long jump—6 feet, 6 inches ; or
   Running long jump—12 feet.
3. 60 yard dash—8 seconds ; or
   100 yard dash—13 2/5 seconds.
4. Cricket ball throw (distance)—195 feet.

"Third test.

1. Pull-up (chinning)—9 times ; or
   Rope climbing (using hands only)—16 feet.
2. Running high jump—4 feet, 4 inches ; or
   Running long jump—14 feet.
3. 220 yard dash—28 seconds ; or
   100 yard dash—12 3/5 seconds.
4. Cricket ball throw (distance)—220 feet ; or
   8 lb. shot put—28 feet.

" It has been found that boys of 12 years of age should be able to qualify for the first test ; boys of 13 and over for the second test, and high school boys for the third test. It does not seem, however, that the different standards should be limited

to these age groups. Accordingly no age or even weight limit is fixed. Any boy may enter any test at any time.

"It is generally agreed that climbing, jumping, running and throwing should be considered the four fundamental activities to be included in any efficiency test, and accordingly each of the three tests makes use of four events. Certain options are allowed to make the tests adaptable to varied local conditions, and to allow choice of those activities most interesting to the boys of any locality. To pass a test a boy must qualify in four events, one from each of the four classes, climbing, jumping, running and throwing.

"It is necessary to qualify at one time in the four events in any one test to pass. If a boy fails in the test one day he should be permitted to practise until he can pass the tests.

"There shall be one trial only in the climbing, chinning, and running events. Three trials are allowed in the jumps and the cricket ball throw."[1]

The test should be given during the months of July, November and March. In the meantime the boys should practise for the events. After one test is passed the boy should aim to pass the next one. A boy who has passed the third test should aim to improve his ability in each event, the object being to see which boy in the school has the best all-around ability and who holds the record for each event.

A certificate or badge should be awarded after each test is passed. Every boy should be encouraged to pass the tests.

[1] Playground and Recreation Association of America, *Athletic Badge Tests for Boys and Girls*, pp. 1-2.

Athletic Standards for Boys, by Dr. John Brown, Jr.[1]

	0 Points.	Honor Standard.	100 Points. Scoring.
60- to 80-pound class.			
50 yard dash	10 sec.	8 sec.	6 sec.
Standing long jump ...	3′ 5″	5′ 6″	7′ 7″
Running long jump ...	5′ 10″	10′	14′ 2″
Cricket ball throw ...	70′	120′	170′
(*Note.*—Base ball used in original test.)			
81- to 95-pound class.			
75 yard dash	13 sec.	11 sec.	9 sec.
Standing long jump ...	3′ 11″	6′	8′ 1″
Running long jump ...	6′ 10″	11′	15′ 2″
Cricket ball throw ...	100′	150′	200′
96- to 100-pound class.			
100 yard dash	16 sec.	14 sec.	12 sec.
Standing long jump ...	4′ 5″	6′ 6″	8′ 7″
Running long jump ...	7′ 10″	12′	16′ 2″
Running high jump ...	2′ 8½″	3′ 9″	4′ 9½″
Cricket ball throw ...	150′	180′	230′
111- to 125-pound class.			
100 yard dash	15 sec.	13 sec.	11 sec.
Standing long jump ...	4′ 11″	7′	9′ 1″
Running long jump ...	8′ 10″	13′	17′ 2″
Running high jump ...	2′ 11½″	4′	5′ ½″
Cricket ball throw ...	145′	195′	245′
Putting 8 lb. shot ...	15′ 6″	28′	40′ 6″
Unlimited class.			
100 yard dash	14 sec.	12 sec.	10 sec.
Standing long jump ...	5′ 5″	7′ 6″	9′ 7″
Running long jump ...	9′ 10″	14′	18′ 2″
Running high jump ...	3′ 3½″	4′ 4″	5′ 4½″
Cricket ball throw ...	160′	210′	260′
Putting 8 lb. shot ...	22′ 6″	35′	47′ 6″

"Points are scored as follows:

	Points
All dashes: For every 1/5 sec. better than minimum ...	5
Standing long jump: For every inch beter than minimum ...	2
Running long jump: For every inch better than minimum ...	1
Cricket ball throw: For every foot better than minimum ...	1
Putting 8 lb. shot: For every 3 inches better than minimum	1
Running high jump: For every inch better than minimum ...	4

[1] John Brown, *Outdoor Athletic Tests for Boys,* pp. 20-21.

SCORING TABLE: INDIVIDUAL EFFICIENCY CONTEST.'

Points.	Dip.	Pull-up.	Standing Long Jump.	Two Standing Long Jumps.	Hop-Step-and-Jump.	Running Long Jump.	Standing High Jump.	Running High Jump.	Throwing Cricket Ball.	Putting 8 lb. weight.
			Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft.	Ft. In.
0	...	...	5 0	10 8	20 8	10 8	2 0	3 0	100	18
2	...	...	5 1	10 10	20 10	10 10	2 0½	3 0½	104	18 6
4	1	1	5 2	11 0	21 0	11 0	2 1	3 1	108	19
6	...	...	5 3	11 2	21 2	11 2	2 1½	3 1½	112	19 6
8	2	2	5 4	11 4	21 4	11 4	2 2	3 2	116	20
10	...	...	5 5	11 6	21 6	11 6	2 2½	3 2½	120	20 6
12	3	3	5 6	11 8	21 8	11 8	2 3	3 3	124	21
14	...	...	5 7	11 10	21 10	11 10	2 3½	3 3½	128	21 6
16	4	4	5 8	12 0	22 0	12 0	2 4	3 4	132	22
18	...	...	5 9	12 2	22 2	12 2	2 4½	3 4½	136	22 6
20	5	5	5 10	12 4	22 4	12 4	2 5	3 5	140	23
22	...	...	5 11	12 6	22 6	12 6	2 5½	3 5½	144	23 6
24	6	6	6 0	12 8	22 8	12 8	2 6	3 6	148	24
26	...	...	6 1	12 10	22 10	12 10	2 6½	3 6½	152	24 6
28	7	7	6 2	13 0	23 0	13 0	2 7	3 7	156	25
30	...	...	6 3	13 2	23 2	13 2	2 7½	3 7½	160	25 6
32	8	8	6 4	13 4	23 4	13 4	2 8	3 8	164	26
34	...	...	6 5	13 6	23 6	13 6	2 8½	3 8½	168	26 6
36	9	9	6 6	13 8	23 8	13 8	2 9	3 9	172	27
38	...	...	6 7	13 10	23 10	13 10	2 9½	3 9½	176	27 6
40	10	10	6 8	14 0	24 0	14 0	2 10	3 10	180	28
42	...	...	6 9	14 2	24 2	14 2	2 10½	3 10½	184	28 [illegible]
44	11	11	6 10	14 4	24 4	14 4	2 11	3 11	188	29
46	...	...	6 11	14 6	24 6	14 6	2 11½	3 11½	192	29 [illegible]
48	12	12	7 0	14 8	24 8	14 8	3 0	4 0	196	30
50	...	...	7 1	14 10	24 10	14 10	3 0½	4 0½	200	30 [illegible]
52	13	13	7 2	15 0	25 0	15 0	3 1	4 1	204	31
54	...	...	7 3	15 2	25 2	15 2	3 1½	4 1½	208	31 [illegible]
56	14	14	7 4	15 4	25 4	15 4	3 2	4 2	212	32
58	...	...	7 5	15 6	25 6	15 6	3 2½	4 2½	216	32 [illegible]
60	15	15	7 6	15 8	25 8	15 8	3 3	4 3	220	33
62	...	...	7 7	15 10	25 10	15 10	3 3½	4 3½	224	33
64	16	16	7 8	16 0	26 0	16 0	3 4	4 4	228	34
66	...	...	7 9	16 2	26 2	16 2	3 4½	4 4½	232	34
68	17	17	7 10	16 4	26 4	16 4	3 5	4 5	236	35
70	...	...	7 11	16 6	26 6	16 6	3 5½	4 5½	240	35
72	18	18	8 0	16 8	26 8	16 8	3 6	4 6	244	36
[illegible]			8 1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

AGE AIM CHART OF PHYSICAL EFFICIENCY.[1]

(For boys eight to twenty years.)

Events.	Years.					
	8	9	10	11	12	13
Standing Broad Jump (Feet and inches) ...	3 4	3 8	4 0	4 6	4 9	5 0
Triple Standing Broad Jump (Feet and inches)	12 0	12 3	13 0	14 0	14 6	15 1
Running Broad Jump (Feet and inches) ...	6 0	6 6	7 0	8 3	9 3	10 0
Running Hop-Step-and-Jump (Unlimited Run) (Feet and inches) ...	10 0	13 0	16 4	18 0	18 8	19 9
Running High Jump (Feet and inches) ...	2 2	2 5	2 8	2 11	3 0	3 4
Basketball Far Throw Overhead (Feet)	14	16	18	20	23	24
Basketball Far Throw (Feet) (Roundarm) (One Step permitted) ...	19	22	26	29	33	37
Playground Ball Throw (Unlimited Run) (Feet)	37	47	57	67	77	88
30-Yard Dash (Seconds and fifths) ...	6 1	6 0	5 4	5 3	5 2	5 1
40-Yard Dash (Seconds and fifths) ...	7 4	7 3	7 2	7 1	7 0	6 4
50-Yard Dash (Seconds and fifths) ...	9 0	8 4	8 3	8 2	8 1	8 0
60-Yard Dash (Seconds and fifths) ...	11 4	11 2	10 4	10 4	10 0	9 4
75-Yard Dash (Seconds and fifths) ...	14 1	13 3	13 1	12 3	12 1	11 4
100-Yard Dash (Seconds and fifths) ...	19 1	18 3	17 1	16 1	15 2	15 0
Rope Climbing (Feet)	8	10	12	13	14	15
Chinning (Times)	...	...	...	1	2	3

[1] Bowen and Mitchell, *The Practice of Organized Play*, p. 67.

AGE AIM CHART OF PHYSICAL EFFICIENCY.—(*Contd.*)

(For boys eight to twenty years.)

Events.	Years.						
	14	15	16	17	18	19	20
Standing Broad Jump (Feet and inches)	5 3	5 6	5 9	6 0	6 2	6 4	6 6
Triple Standing Broad Jump (Feet and inches)	16 0	16 9	17 0	17 3	17 6	17 9	18 0
Running Broad Jump (Feet and inches)	10 6	11 0	11 6	12 0	12 6	13 0	13 6
Running Hop-Step-and-Jump (Unlimited Run) (Feet and inches)	21 7	23 0	23 6	24 0	24 6	25 0	25 6
Running High Jump (Feet and inches)	3 6	3 9	3 10	3 11	4 0	4 1	4 2
Basketball Far Throw (Overhead) (Feet) ...	27	29	31	35	37	39	40
Basketball Far Throw (Feet) (Round arm) (One Step permitted.)	42	47	48	50	52	54	55
Playground Ball Throw (Unlimited Run) (Feet) ...	102	108	110	115	120	125	125
30-Yard Dash (Seconds and fifths) ...	5 0	5 0	5 0	5 0	5 0	5 0	5 0
40-Yard Dash (Seconds and fifths) ...	6 3	6 2	6 2	6 2	6 2	6 2	6 2
50-Yard Dash (Seconds and fifths) ...	8 0	7 4	7 3	7 3	7 3	7 1	7 0
60-Yard Dash (Seconds and fifths) ...	9 2	9 0	8 4	8 4	8 4	8 3	8 3

AGE AIM CHART OF PHYSICAL EFFICIENCY.—(*Contd.*)

(For boys eight to twenty years.)

Events.	Years.						
	14	15	16	17	18	19	20
75-Yard Dash (Seconds and fifths) ...	11 2	11 0	11 0	10 4	10 3	10 2	10 0
100-Yard Dash (Seconds and fifths) ...	14 1	13 2	13 1	13 2	13 2	13 2	13 1
Rope Climbing (Feet) ...	16	17	17	17	18	18	20
Chinning (Times) ...	3	4	5	5	5	6	6

The following are free exercise motor ability tests which have been worked out by a committee of the American Physical Education Association:[1]

"These balance tests should come during, or at the end of, the regular lesson. From the time the child begins to walk, and all through adult life, body control and balance are essential to all skilled big muscle activities. The aviation studies have clearly shown how much the eyes are used as an aid in general body control. Their eyes-closed test shows how much easier it is to measure muscular sense and semi-circular canal control with the eye aids eliminated. The *success* or *failure* method makes possible the measuring of the ability of an entire class in a brief time, not over one minute per trial. These tests should not in any case take the place of the regular lesson. The daily lesson should educate the pupil in improving bodily control. The score in each grade with the eyes open or closed is based upon the ability of the pupil to hold the balance without movement of the standing foot or base on the floor during the test. In the first eight grades all eyes-closed tests must start with the pupils' eyes closed. Method of grading: 5 points are given for holding balance 5 seconds; 10 points for 10 seconds; 15 points for 15 seconds. These points may be added to the regular class grades in physical education.

[1] Report of the Committee of the American Physical Education Association. *Motor Ability Tests*, February, 1929, pp. E. 3-5.

Standing Balance Tests.

"In exercises with closed eyes, the eyes should be closed before the exercise begins.

"Two trials are allowed in all free balance tests, with the best counting. 'With'—at the same time; 'and' or 'then'—following preceding movement in time.

First Grade. Tests four times a year; *e.g.*, in October, December, February, April. Greater accuracy and increased difficulty is secured if the first eight grade exercises are done on a walking beam. This method might be used in selecting the best three from the best ten pupils.

October test, close walk standing position.

December test, eyes closed, and close walk standing position, with arms sideways raised, palms up.

February test, eyes closed, and close walk standing position.

April test, close walk standing position, with neck firm position.

Second Grade.

October test, forward close walk standing position.

December test, eyes closed, and forward close walk standing position, with arms sideward oblique upward raising.

February, eyes closed, and forward close walk standing position.

April test, eyes closed, and close walk standing position, with head press, fingers touching top of head, elbows well back.

Third Grade.

October test, close walk standing position, heels raise (Time begins after heels are raised.)

December test, eyes closed, and close walk standing position, heels raised.

February test, eyes closed, and close walk standing position, heels raise, with arms forward raising.

April test, eyes closed, and close walk standing position, with arms forward bend position.

Fourth Grade.

October test, forward close walk standing position, with heels raised.

December test, eyes closed, and forward close walk standing position, with heels raised.

February test, eyes closed, and forward close walk standing position, with heels raised, arms backward raised.

April test, eyes closed, and forward close walk standing position, with heels raised, arms forward bend position.

Fifth Grade.

October test, deep knee bending position, back of fingers touching heels, arms touching hips behind.

December test, eyes closed, and deep knee bending position.

February test, eyes closed, and deep knee bending position, with arms backward raise.

April test, eyes closed, and deep knee bending position, with head press.

Sixth Grade.

October test, leg raising forward (9 to 12 inches).

December test, eyes closed, and leg raising forward.

February test, eyes closed, and leg raising backward, arms backward raise.

April test, eyes closed, and leg raising forward, head press.

Seventh Grade.

October test, leg raising backward (9 to 12 inches).

December, eyes closed, and leg raising backward.

February, eyes closed test and leg raising backward, arms forward bend.

April test, eyes closed, and leg raising backward, with arms forward upward raise.

Eighth Grade.

October test, leg raising sideward (9 to 12 inches).

December test, eyes closed, and leg raising sideward.

February test, eyes closed, and leg raising sideward, with neck firm.

April test, eyes closed, and leg raising sideward, with head press.

Moving Balance Tests.

Ninth Grade.

October test, jump forward at least two feet to deep knee bend (hold fifteen seconds).

December test, jump forward at least two feet on to left or right foot with opposite leg raised forward one foot high (hold fifteen seconds).

February test, jump forward to deep knee bend (five seconds), jump forward at least one foot on to left or right foot with leg raising forward (one foot), hold ten seconds.

April test, jump forward on to L to R foot, with leg raising forward (hold five seconds), then backward leg swing to body horizontal. With standing knee bent (five seconds), return to first position of leg raised forward, five seconds (fifteen seconds in all).

Tenth Grade.

October test, jump sideward at least one foot to deep knee bend, hold fifteen seconds.

December test, jump sideward, L on to L foot (at least one foot) with R leg raised sideward R (hold fifteen seconds).

February test, jump sideward R to deep knee bend (five seconds); jump sideward left on to L foot, R leg raised sideward R, hold ten seconds.

April test, jump sideward L on to L foot R leg raised sideward R, hop, change on to R foot, L leg sideward L, hop, change to L foot, R leg sideward R, each five seconds.

Eleventh Grade. All changes to cover at least one foot.

October test, jump backward to deep knee bend, hold fifteen seconds.

"Standing Head Touch Jump: The contestant stands under the suspended cardboard, crouching as in the standing broad jump. With a forceful swing of the arms forward and straightening of legs the contestant jumps up, aiming to touch the head to the cardboard at as high a level as possible. It will require a number of trials to find the right level. As in the broad jump the feet may leave the floor only once to have the jump a fair one.

"A piece of cardboard 12 × 12. Tie strings diagonally from corner to corner and fasten a long string to the cornerwise strings at their union so that the cardboard will hang level. Run the long string through a screw eye or over any projection allowing the cardboard to hang free at least four feet from any obstruction.

(For all other events regular athletic rules apply.)

December test, jump backward on to L or R foot, with opposite leg raised backward (hold fifteen seconds).

February test, jump backward to deep knee bend (five seconds). Jump backward on L or R foot, with opposite leg raised backward (five seconds), then hold this position with eyes closed (five seconds).

April test, jump backward on to L foot with R leg raised backward (five seconds). Change, hop on to R foot, L leg raised backward (five seconds), then hold this position, with eyes closed (five seconds).

Twelfth Grade. All changes to cover at least two feet.

October test, jump forward on to L or R foot with opposite leg raised backward (fifteen seconds).

December test, jump backward on to L or R foot, raising opposite leg backward, fifteen seconds.

February test, jump forward onto L foot, R leg raised backward (five seconds), then leap forward onto R foot, L leg raised forward (five seconds), then leap forward to deep knee bend (five seconds).

April test, jump forward on to L foot, R leg raised backward (five seconds), then leap forward on to R foot, L leg raised forward (five seconds), then leap backward on to L foot, R leg raised backward (five seconds)."

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CHAPTER XIII.

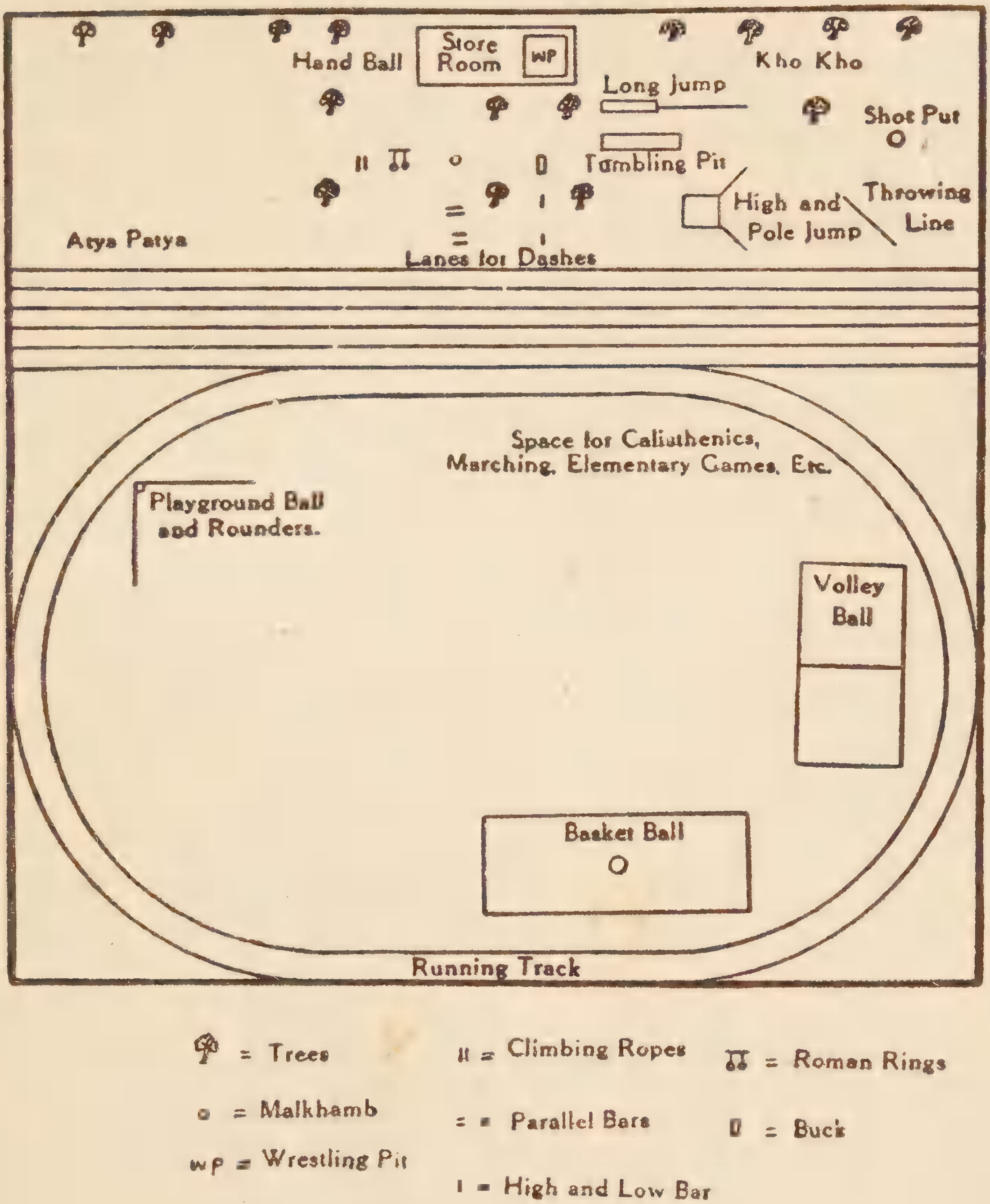
EQUIPMENT AND FIELDS FOR SCHOOLS.

To promote a modern system of physical education a school requires suitable equipment. The following is a list of standard equipment for middle, high and normal schools:

50 pairs of light Indian clubs.
50 pairs of dumb-bells.
50 laziums.
50 bamboo sticks 4′ long.
2 pairs of parallel bars.
1 buck.
1 horse.
2 high and low bars.
1 pair Roman Rings.
2 iron posts with a cross-bar for hanging and swinging equipment.
2 basketball backstops with uprights.
4 standard hurdles and 40 hurdles consisting of simple uprights with cross-bars.
1 high and pole jump standard with six cross-bars.
1 take-off board for the long jump.
1 shot put toe board.
6 poles for pole jump.
1 twelve- and 1 eight-pound shot.
1 stop watch.
1 measuring tape.
2 durries for tumbling 5′ × 10′.
1 bulletin board.
1 weighing machine.
1 height measuring standard.
1 first aid kit.
Games equipment for hockey, football, cricket, volley ball, simplified rugby, playground ball and basketball.
5 bean bags (for normal schools only).
1 boxing ring (for high and normal schools only).
1 set boxing gloves (for high and normal schools only).

The equipment should be arranged in a shady part of the school compound in such a way that one teacher can super-

vise several groups on various pieces of apparatus. Following is a suggested arrangement: —



GYMNASIUM

For an ideal outdoor gymnasium, apparatus should be arranged in a shady part of the school compound in front of a small building 30′ × 17′ or 27′ × 25′, containing a wrestling pit and space for storing movable equipment. This building should be a headquarters for all physical activities of the school. In it should be bulletin boards, scales, height

and weight spirometer, first aid kit, the physical instructor's desk, etc. In places where the rains seriously interfere with outdoor work a larger gymnasium is necessary.

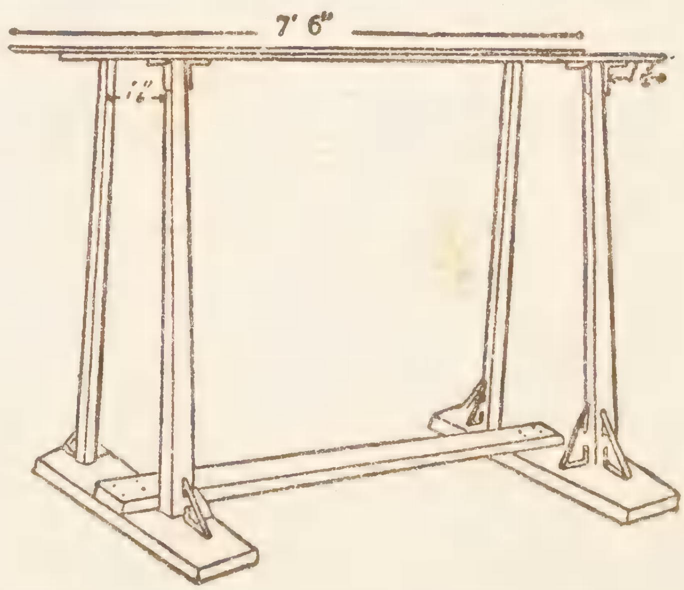
For those schools which can afford it, equipment should be purchased from a sports goods dealer, but for other schools equipment which will prove of practical value can be made locally in most cases.

Following are descriptions and measurements of various pieces of equipment and some play and athletic areas:—

Parallel Bars.

Every school should have at least two pairs of parallel bars. Each consists of two parallel bars, each resting on two uprights. The bars may be made movable by fastening the uprights to a base, as shown in the drawing, or they may be stationary, in which case the uprights are of sufficient length so that they can be placed firmly into the ground.

The parallel bars have a diameter of 2″ in the centre and $1\frac{7}{10}''$ at the ends and are made of khamer wood or some other strong wood with a straight grain. The portion of the bottom surface of the bars which rests on the uprights is flat and projects downwards $\frac{1}{2}''$.



For the movable bars the uprights are 4′ 3″ long. The lower end is 3″ × 3″ and the top end is $2\frac{1}{2}'' \times 2''$ to fit the bars. The upright is therefore tapered from top to bottom, as shown in the drawing.

The stationary upright is 7′ 3″ long, 3′ of which is set into the ground. The ends should be tarred before putting into the ground. The other dimensions are the same as given for the movable bars.

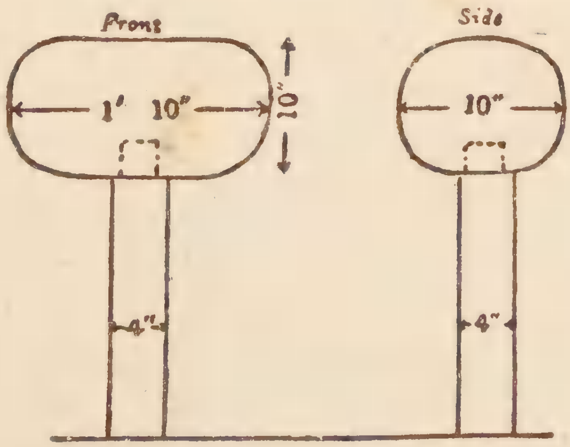
Two boards 2′ 10″ × 1′ × 2″ are used for the end bases of the movable bars, while the centre baseboard connecting the two is 5′ 4″ × 10″ × 1″ and is screwed to the end baseboards.

Each upright is fitted to the end baseboard by a mortise and tenon joint and is held in place by two angle irons 2″ wide × $\frac{1}{4}$″ thick, bent to form triangles 11″ × 5$\frac{1}{2}$″ × 12$\frac{1}{2}$″, as shown in the drawing. The ends should meet at the centre of the side of the angle which is attached to the upright.

The parallel bars are held to the uprights by eight 7″ × 1$\frac{1}{2}$″ × $\frac{1}{4}$″ angle irons, bent at right angles, there being two attached to each upright.

THE BUCK.

This is made of teak wood. The corners and edges are rounded so that from the side view it looks round except for a distance of 4″ at the top centre which is very nearly flat. From the front view the top is flat and the ends are rounded.

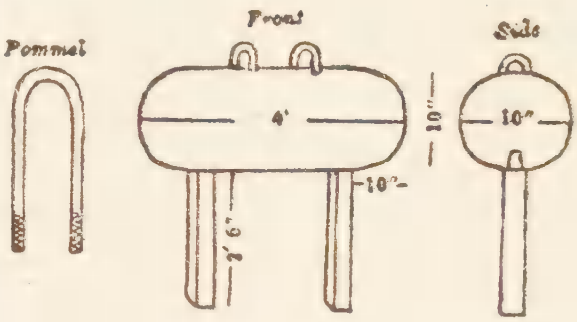


The buck should be perfectly smooth and free from slivers. The upright is 5′ 10″ long, 3′ of which is tarred and set into the ground and 4″ of which extends into the buck, making the bottom of the buck 2′ 6″ from the ground.

The Horse.

The horse is made of teak wood and the corners and edges are rounded as suggested for the buck.

Four 1 1/5″ holes are drilled from the top to the bottom of the buck to fit the pommels, as shown in the diagram. These holes, two for each pommel, are 1′ 4″ from each end and 6½″ apart.



The pommels are U-shaped pieces of iron made from 1 1/5″ diameter and 3′ 4″ length stock bent in the centre so that the curve is perfectly rounded and the two sides are 6½″ apart. ¼″ holes are drilled through the sides of the pommels 4″ from the top of the curve. 2″ pins are put through these holes so that when the pommels are in place they are kept from slipping down. Grooves are cut in the top of the horse to fit these pins. The ends of the pommels are threaded so that nuts can be screwed on underneath the horse.

The uprights are the same size as those used for the buck.

The High Bar and Low Bar. (Horizontal bars.)

Two horizontal bars are needed for the average sized school. They should be adjustable to any height desired.

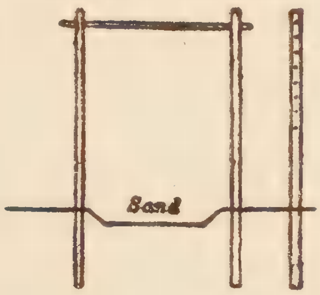
Two uprights. These are 10′ × 4″ × 4″. Seven 1¼″ diameter holes are drilled through the centre of each pole at 6″ intervals, beginning 6″ from the top. After these holes are bored in both poles, ½″ diameter holes are drilled in one pole only to intersect at right angles each of the larger holes already made.

The crossbar. Use one galvanized iron pipe 1″ in diameter and 6′ 6″ long. Bore a ⅝″ diameter hole in the pipe 5″ from one end.

Use one $\frac{1}{2}''$ carriage bolt $4\frac{1}{2}''$ long to hold the crossbar in place.

The bottoms of the uprights should be tarred and then set in the ground 5′ 8″ apart, with the $1\frac{1}{4}''$ holes facing each other. Before filling in the holes around the uprights the crossbar should be put through the top holes to be sure the bar is absolutely horizontal. The uprights should be set in concrete if possible, but stone and dirt may be used.

A sand pit should be dug beneath the bar extending 12′ in front and 2′ in back, being $5\frac{1}{2}'$ wide and 8″ to 10″ deep. The dirt should not be dug up within 8″ in front, in back and on the inner side of each upright as the hard earth around the posts helps to strengthen them.



Flying Rings.

The flying rings are 7″ in diameter, made of metal 1″ in diameter. They are hung 18″ apart.

The rings may be hung on cable, chain or rope. The cable should be at least $\frac{1}{8}''$ stock, the chain of light, strong material, the rope $\frac{3}{4}''$ to 1″ in diameter.

Each end of the cable, chain or rope should be permanently fastened to a C-shaped hook. The hook on one end should be hung from a strong link which is rigidly fastened to a stout cable which is wound around a branch or horizontal beam.

Climbing Rope.

These should be made of strong rope from 1″ to $1\frac{1}{2}''$ in diameter and at least 20′ in length. The rope when hanging should come within one inch of the ground. An end knot should be tied at the lower end so that the rope will not unravel.

The upper end of the rope should be attached permanently to an S-shaped hook made of iron or steel. This hook can be hung from a stout cable wound around a branch of a tree or a horizontal beam and the rope can easily be taken down when not in use.

From two to four ropes should be hung, thereby enabling several boys to participate in rope climbing activities at the same time.

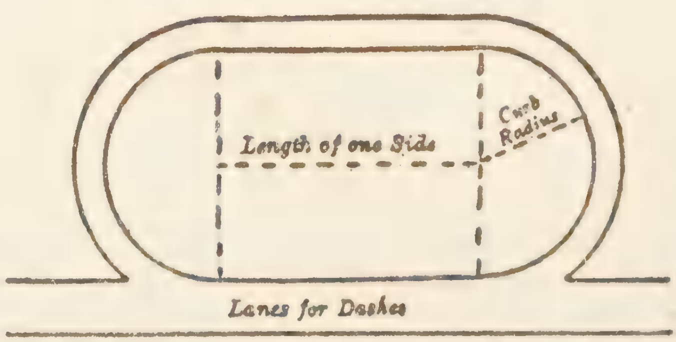
Marking A Running Track.

A circular running track must be made according to the size of the available space, but the best length is one-quarter mile. A circular track should be made so that there is at least a 20′ width on one side for the 100 and 220 yard dashes. The rest of the track should be at least 15′ in width. A greater width is preferable.

According to the Olympics rule the track is measured 12″ in from the actual measurement because runners never run within 12″ of the line. If a quarter mile track has an end radius of 105.042′, to be exactly a quarter mile, one foot would be deducted and the track would be measured 104.042′.

Following are some standard measurements for various sizes of running tracks:—

Length of track in miles.	Length of one side.	End radius	End radius curb line.
$\frac{1}{4}$	330′	105.042′	104.042′
$\frac{1}{4}$	323.85′	107′	106′
$\frac{1}{4}$	267.3′	125′	124′
$\frac{1}{5}$	245.25′	90′	89′
$\frac{1}{6}$	220′	70.028′	69.028′
$\frac{1}{6}$	180′	82.751′	81.751′
$\frac{1}{16}$	82.5′	26.260′	25.260′



Procedure in marking a running track:—

1. Find the length and breadth of the field. Let us say for example, that the field is 375′ × 209′.

2. Deduct space to be used for lanes for dashes, running track and for spectators, if required.

6 lanes, each 4′ wide, equal 24′.

The other side of the track is 15′ in width 24′ + 15′ = 39′ which, deducted from the width of 209′, leaves 170′. This figure will be used in calculating the area to be enclosed by the running track.

The two ends of the track are each 15′ in width. Twice 15′ equals 30′ which is deducted from the length of the field. 375′ − 30′ = 345′. This figure will be used in calculating the length of the area to be enclosed by the running track.

3. Calculate what size of track is most suitable for a space 345′ × 170′.

(*a*) Divide the width by 2. 170 ÷ 2 = 85. This is the end radius.

(*b*) Figure the length of both curves.
3.1416 × 85 = 267.0360.
267.0360 × 2 = 534.0720, the length of both curves.

(*c*) Deduct twice the radius from the length of the field.
85′ × 2 = 170′.
345′ − 170′ = 175′ or the length of one side of the track.
175′ × 2 = 350′, the length of both sides of the track.

(*d*) Add length of two sides and length of both curves. 350′ + 534.0720 = 884.0720′. This is the actual size of the track which can be made within the given area.

(*e*) The track should be an equal measurement, such as 1/4, 1/5, or 1/6 mile in length. Find the nearest size of track which can be made within the area calculated.
5280′ = 1 mile.
5280′ ÷ 6 = 880′ or 1/6 of a mile.

(*f*) Change the measurement of the field to conform to 880′.
From 884.0720′ deduct 4.0720′.
Deduct 2.036 from the length of each side. The length of each side, then, will be 173′ instead of 175′.

(*g*) We now have a 1/6 mile running track. The length of each side is 173′ and the end radius is 85′..
According to the rules the track should be one foot smaller than the actual measurement; therefore, deduct one foot from the radius and the result is 84′, the measurement to be used for marking the track.

(*h*) Find the centre of the running track, not of the entire field.

(*i*) Find the centre of the end curves.

(*j*) Mark the end curves to a point at right angles to the centre of the curves so that a half circle is formed at each end of the track.

(*k*) Mark the two side lines and the chief work of making a running track is complete. The lanes for dashes can also be marked.

(If twine is used in marking the end curves, the distance should be measured at short intervals to insure accuracy, as the twine is elastic. A steel tape is most satisfactory for this purpose.)

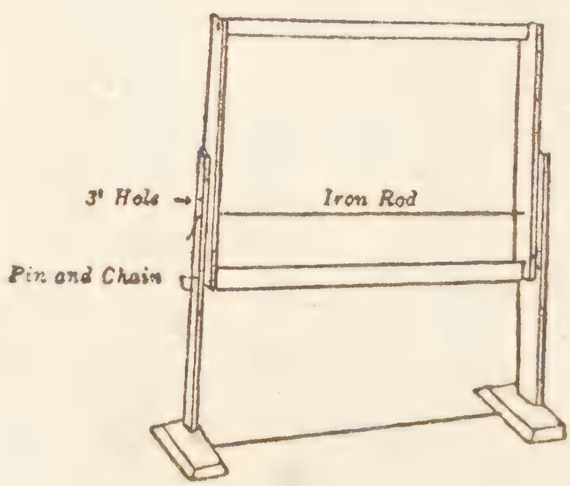
If the track is to be made for permanent use or for Olympics events the curb of the track should be made of concrete 4″ wide and 2″ to 3″ high, the inner edge being rounded, or wooden curbs may be used, long wooden strips being held in place by 3″ stakes placed at 15′ intervals. The wooden strips should be 2″ to 3″ in height.

Lanes for Dashes.

The lanes for the dashes should be at least 4′ wide, each line to be two inches in width.

Hurdles.

Every high school should have a few model hurdles so that the boys will have some idea of the hurdles used in the Olympics. Eventually there should be a set of 40 hurdles in each community to be used for community tournaments.



A hurdle consists of two uprights, each resting on a base supporting a rectangular frame. The frame is swung on an iron rod so that it is adjustable to three heights. 3′ 6″, 2′ 6″ and 3′, but is rigidly fastened at the required height.

The uprights are 2′ 6″ in height from the bottom of the bases and are made from $2\frac{1}{2}'' \times \frac{3}{4}''$ boards. They are attached to the base by a mortise and tenon joint.

Each base is 1′ $7\frac{1}{4}'' \times 2\frac{1}{2}'' \times 2''$ in size, the ends being bevelled on the top for a distance of $3\frac{1}{2}''$ as shown in the drawing. They are held together by a $\frac{1}{4}''$ iron rod or by a wooden crossbar extending from the inside of one base to the other.

The gate is made from $2'' \times \frac{3}{5}''$ material, the four sides being fitted together as shown in the drawing. $\frac{3}{10}$ holes are drilled through the sides of the gate 1′ 8″ from the bottom and through the two uprights 8″ from the top. The gate is held in place by a $\frac{3}{10}''$ iron rod 4′ 3″ long which is bolted in place. When the gate is turned one way it is 2′ 6″ high and when turned the other way, 3′ 6″ in height. The gate is held at either height by a pin which is placed in holes drilled through the upright and base on one side as shown in the drawing. The pin is attached to a small chain which is attached to the side of the upright so that it will not be lost.

The hurdle should also be adjustable to a height of 3′. The gate must be unscrewed to do this. Holes are drilled 2″ from the top of each upright so that when the gate is placed between these holes the top is 3′ from the ground. Another hole is drilled through the side of the gate from the pin-hole to be used for keeping the gate in place at the 3′ height.

High Jump and Pole Jump Standard.

(*a*) *The uprights.*—The recommended height is 12 feet, although 10 or 11 feet would be adequate for most schools, as a pole jump of more than ten feet is seldom made by school boys. Each upright should be $2\frac{1}{4}''$ wide and $2\frac{1}{4}''$ thick and should be held upright on a base. $\frac{1}{8}''$ holes should be drilled through each upright, beginning two feet from the bottom of the base and continuing at half inch intervals to the top of the upright. The standards should be marked off in inches and feet.

(*b*) *The bases for the uprights.*—Each of these is made of two crossed boards, each $22'' \times 2'' \times 4''$, using a half cap joint. The upright is spiked to the centre of the crossed

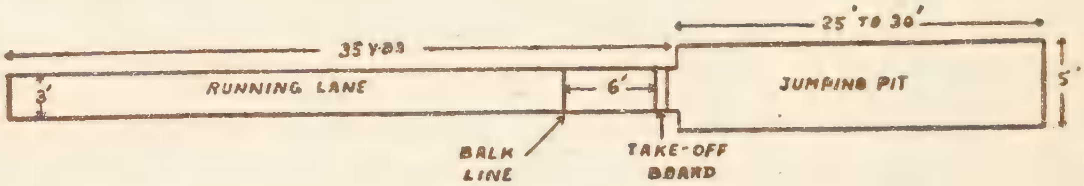
boards and is braced by four $1' \times 1\frac{1}{2}'' \times 1''$ pieces of timber which are each nailed 1″ from the ends of the crossed boards at an angle to the upright. (Triangular pieces of angle iron are more suitable than wood for these braces.)

(*c*) The most suitable crossbars are triangular in shape and made of wood, each side of the triangle measuring $1\frac{3}{16}''$. The length is 13′.

(*d*) The jumping pit is 12′ square and 1′ deep and is filled with sand.

Long Jump Pit and Take-off Board.

The long jump pit should be about 10″ deep and filled with sand.



The take-off plank is a joist 8″ wide, 5″ high and at least 3′ long, sunk in the ground so that the top is flush with the ground. It is placed at the jumping end of the pit and there should be sprinkled 4″ between it and the pit soft dirt or sand which should be ¼″ higher than the take-off board.

Discus Throw.

The discus is thrown from a circle 8′ 2½″ in diameter. All throws must be made within a 90 degree sector marked on the ground.

The discus can be purchased through any sports goods dealer.

Shot Put Circle and Toe Board.

The shot put circle is 7′ in diameter.



On the side of the circle nearest the area toward which the shot is thrown is placed a toe board $4' \times 4'' \times 4''$, the

inner edge of which fits the curve of the circle. It is fastened to the ground by two pegs which are attached to the bottom of the board 6″ from each end. These pegs should be $5\frac{1}{2}$″ long and $\frac{3}{4}$″ in diameter cut in a conical shape.

The Javelin Throw.

The javelin is thrown from behind a scratch line which is a board $2\frac{3}{4}$″ wide, 12′ in length (minimum length) and about 2″ high, which is sunk flush with the ground.

At least one javelin should be purchased through a reliable dealer for a model, but as they usually break easily, a number of home-made ones should be available. They can be made of bamboo or any other wood which fills the specifications. The javelin is 8′ 5″ in length, weighing not less than 1.6 pounds. One end should have a sharp iron or steel point. The javelin should be so constructed that the centre of gravity is not more than 1.203 yards or less than 2.953 feet from the point. The front end of the javelin is therefore heavier than the back end. At the centre of gravity it is about 1″ in diameter and it tapers down to about $\frac{1}{2}$″ at the rear end.

About the centre of gravity a grip is formed by binding whip-cord without knots around it $6\frac{3}{10}$″ broad. The whip-cord should not exceed the circumference of the shaft by more than .984″.

Batons for Relay Races.

These are hollow wooden tubes not more than 11.81″ in length, 4.724″ in circumference and not less than 1.769 ounces in weight, according to the Olympics rules.

Tug-of-War Rope.

The rope should be long enough to allow for a pull of 12′ and for 12′ slack at each end, together with 4′ for each competitor. A piece of white tape should be affixed around the centre of the rope and also on the 6′ mark on each side of the centre. Lines should be marked on the ground to correspond with the centre and the 6′ marks on the rope.

The rope should be not less that 4″ in circumference.

Throwing the Hammer.

The throw is made from a circle 7′ in diameter. In front of the circle and extending from it shall be marked on the ground two lines forming a 90 degree sector into which all throws must fall.

The hammer can be purchased through a sports goods dealer.

Potato Race.

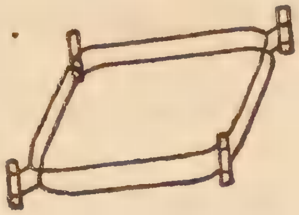
Equipment: 6 to 8 potatoes (or blocks of wood 2″ square) for each contestant. 1 receptacle (pail, basket, box, can, etc.) not over 2′ high and having an opening not over 36″ in circumference for each contestant.

The receptacles are placed about five feet apart on a starting line and in a straight line in front of each receptacle and at right angles to the starting line the potatoes for each contestant are placed on the ground at 2 yard intervals, the first one being 2 yards from the receptacle. The object of the race is for each contestant to pick up the potatoes one at a time and deposit them in his own receptacle. A potato missing the receptacle or bouncing out of it must be placed in the receptacle before the next one is touched or the player is disqualified. A finish line is marked on the ground 5′ in back of the starting line. When all the potatoes are in the receptacle the runner dashes to this line.

This is a fine type of race for boys and may be played without official equipment by using any small objects of suitable size, as stones, etc., instead of potatoes and placing them in circles about 1′ in diameter marked on the starting line instead of receptacles.

Boxing Ring.

The boxing ring shall be not less than 16′ nor more than 24′ square. At each corner is a post 7′ × 4″ × 4″, the bottom 3′ of which has been tarred and set into the ground. The ring is enclosed by two strands of rope, 18″ and 3′ from the ground. These are not attached directly to the posts; short lengths of rope connect them to the posts so that the strands are held a foot away from each post, making a smaller square



within the posts. Grooves are cut in the posts at heights of 18″ and 3′ for the attachment of the short ropes.

The floor of the ring should be smooth and free from obstructions and grass.

Wrestling Pit.

This should be not less than 15′ nor more than 24′ square. It should be 10″ deep and filled with sand or red dirt.

Jumping Pits for Tumbling and Self-testing Activities.

The pits used for the long jump, high jump and horizontal bars can be used for this purpose. A good tumbling pit is 5′ wide and from 10′ to 20′ long, with a depth of 8″ to 12″ filled with sand.

Dumb-bells.

Every schol of average size should have 50 pairs of dumb-bells. They should weigh between one and two pounds per pair, $1\frac{1}{2}$ pounds being the most suitable weight for schools. Dumb-bells are made from blocks of teak wood $8\frac{1}{4}'' \times 3'' \times 3''$.



The block is first rounded to a diameter of $2\frac{3}{4}''$. Beginning $2\frac{1}{5}''$ from each end the centre part is cut away to a diameter of 1 1/5″, forming the handle. (The centre of the handle should be slightly thicker than the ends.) The straight sides of the dumb-bells are now bevelled and the edges rounded.

Indian Clubs.

Each school of average size should have 50 pairs of Indian clubs. The best weight for schools is between one and two

pounds per pair, preferably 1½ pounds. Each club is made from a block of teak wood 15½″ × 2⅞″ × 2⅞″. The block is first turned on a lathe to a diameter of 2¾″. Beginning 3½″



from one end the wood is cut in a curve to the same end so that at the end the wood is 1¼″ in diameter. Going in the other direction from the same 3½″ mark, the wood is curved for a distance of 5½″. There remains at the end of the club 1½″ of wood. This is rounded to form a knob 1″ in width and 1¼″ in diameter. The club will be 15¼″ in length when completed.

Wands.

Every school should have 50 wands. They are very cheap in price as they can be made from bamboo sticks. The diameter is approximately 1″ and the length 3½′, although this may vary according to the bamboo available.

Lathi Sticks.

These can be made from bamboo sticks. The length for each individual is his height as far as the top of his ear. For a school they should be made in three heights to suit all students.

Medicine Ball.

This is made of any kind of strong, pliable leather, using a strong raw hide lace to sew it together. The ball most suitable for schools is anywhere from 30″ to 42″ in circumference, with a weight of 4 to 8 pounds. When the leather is cut and sewed, leaving a small opening, it is filled with cotton, using enough to make the ball firm and not too pliable.

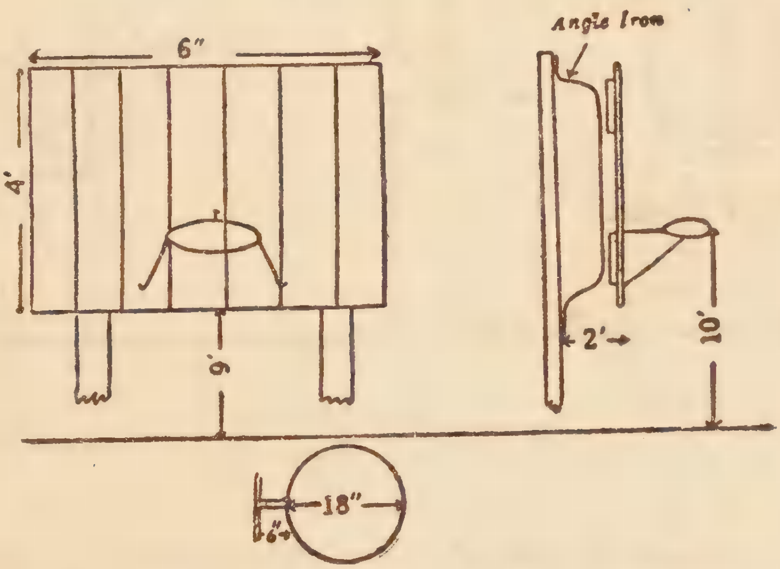
Handball Court.

Handball is an excellent game for teachers as well as students and can be played against any blank wall of the school buildings. Two vertical lines, 16′ high and 20′ apart,

are marked on the wall. A horizontal line connects the top ends of these lines, being exactly 16′ from the ground. The court extends on the ground back from the wall for a distance of 34′ and a width of 20′. The side lines are extensions of the vertical wall lines. 13′ from the wall and parallel to it a line is drawn across the court to be known as the "short line". 9′ behind this line there is an imaginary line called the "service line".

If a regular handball is not procurable this game may be played with a tennis ball. The court is excellent for practising tennis, as well as for playing handball.

BASKETBALL BACKSTOPS.



The backboard shall be rigid and perfectly smooth, made of boards closely fitted together. The surface shall be painted white.

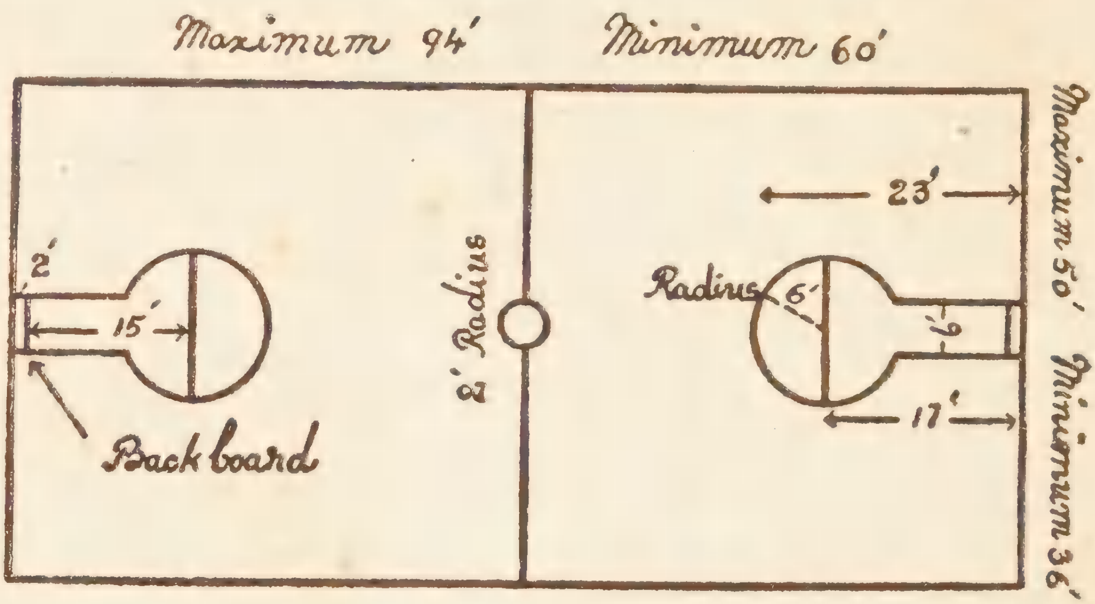
The uprights are placed in the ground on the end line of the basketball court so that the front of the back board is 2′ from the end line. The uprights are made from 16½′ planks and the bottom 3′ tarred and set into the ground.

The angle irons which are used to keep the back board extended from the uprights are made from angle irons 6′ 4″ in length and as strong as can be secured. 1′ 8″ from each end they are bent again to fit the uprights. These are bolted to the uprights and back-board.

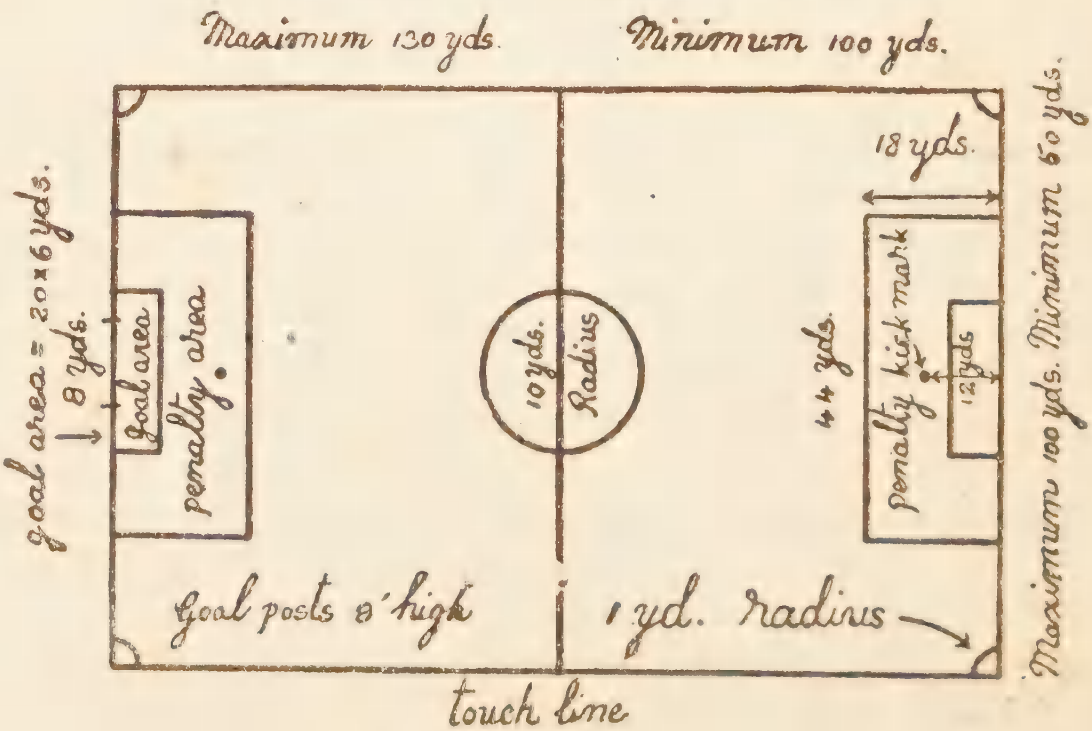
. The ring is made from round iron ½″ in diameter and 6′ 2¾″ long. This is bent to form a ring with the two ends

projecting from one side, as shown in the drawing, and bolted to the backboard. The ring is held horizontal by two pieces of the same round iron which are welded to each side of the ring and extended obliquely downward to the backboard, where they are bolted.

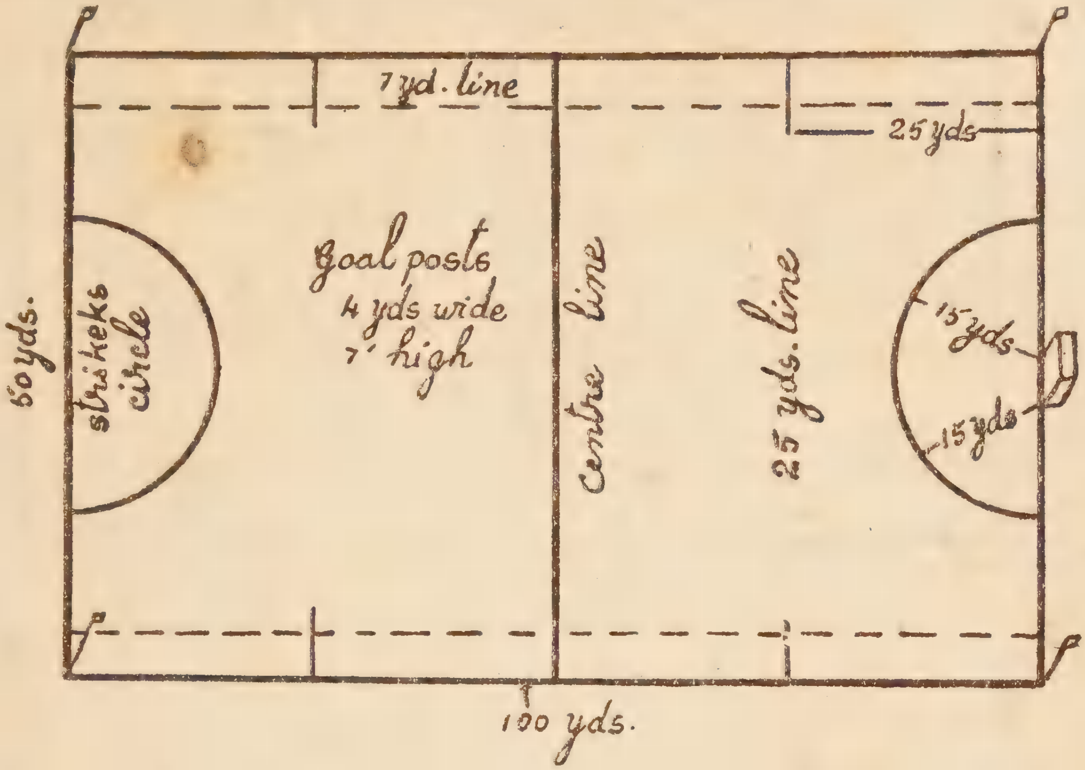
BASKETBALL COURT.



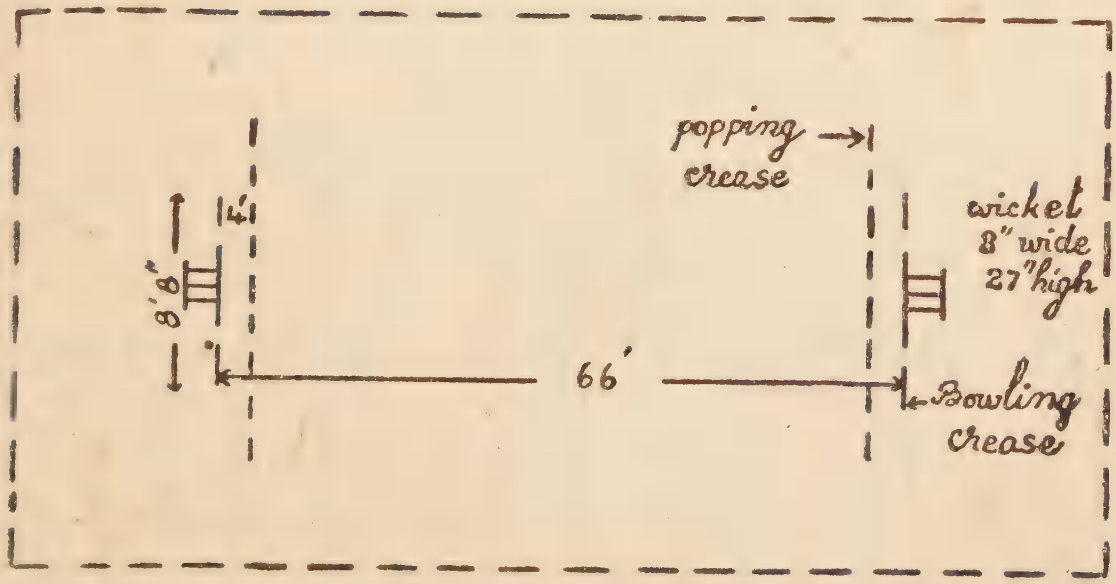
FOOTBALL FIELD.



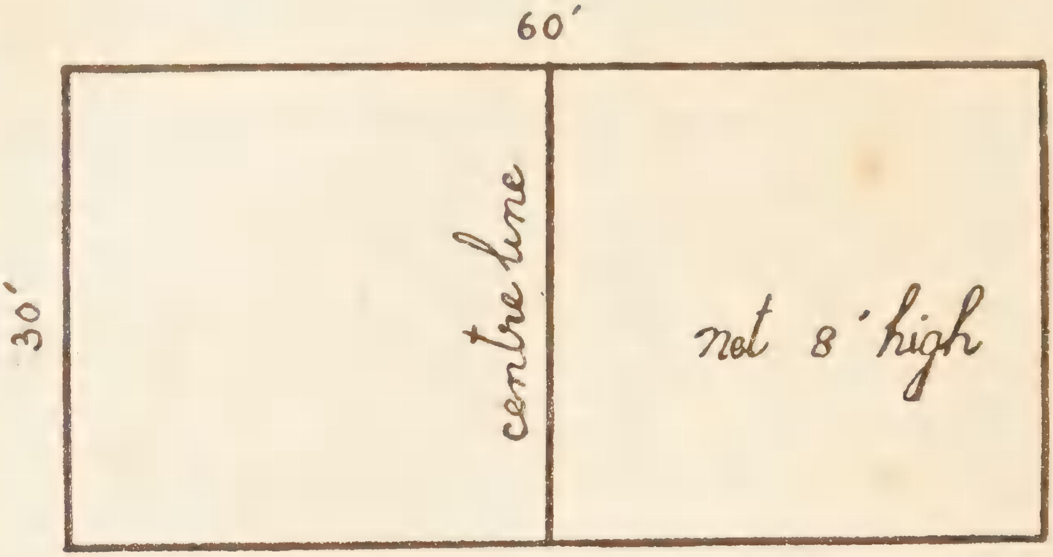
HOCKEY FIELD.



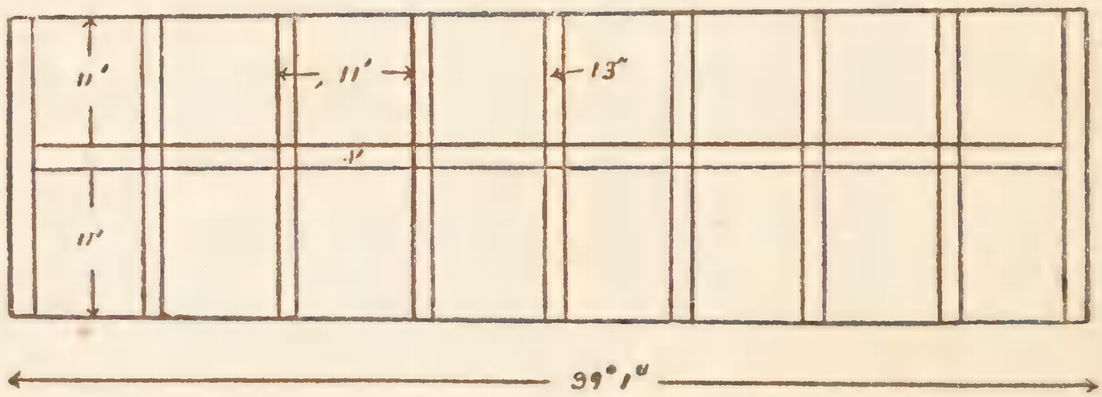
CRICKET FIELD.



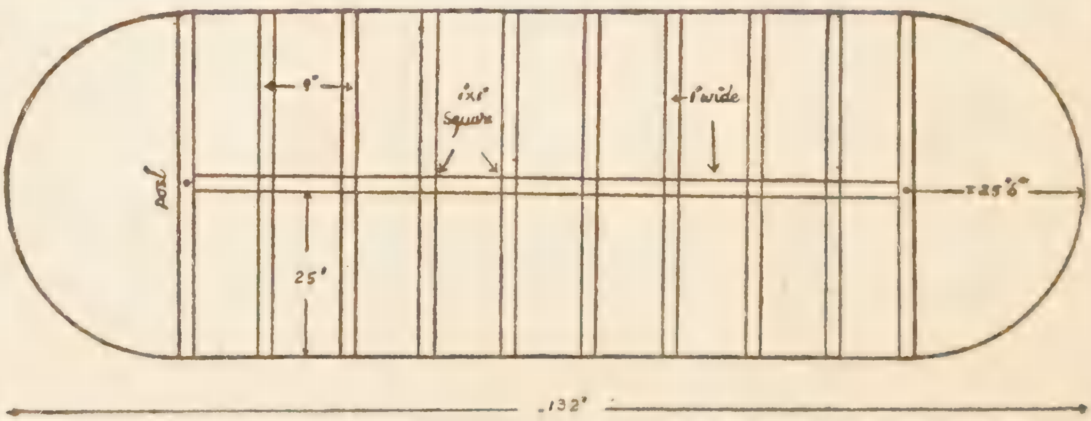
VOLLEY BALL FIELD.



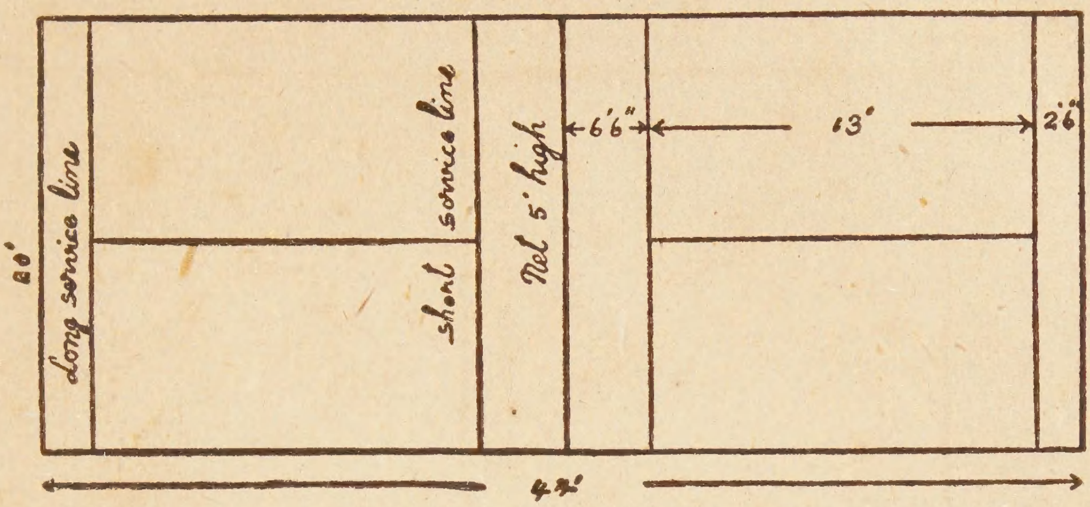
ATYA PATYA FIELD.



KHO KHO FIELD.



BADMINTON COURT.



For diagrams for Simplified Rugby, Playground Ball and Tenikoit (Deck Tennis) fields, see Chapter X, 'Fundamentals of Games'.

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